

OCTOBER 1957

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SCIENCES

Contractors and Engineers

magazine of modern construction



Winter
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Backfill compaction in cold weather. Page 72

On Massachusetts Turnpike Project...

Gradall averaged 58 hours weekly — from start to finish



Gradall excavated a five-foot deep trench for underground power lines at the rate of 1,000 lineal feet daily; then handled backfilling and finish grading.



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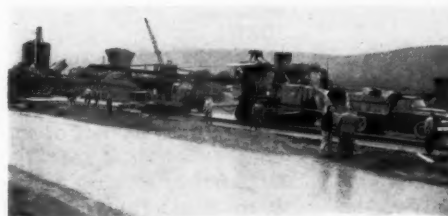
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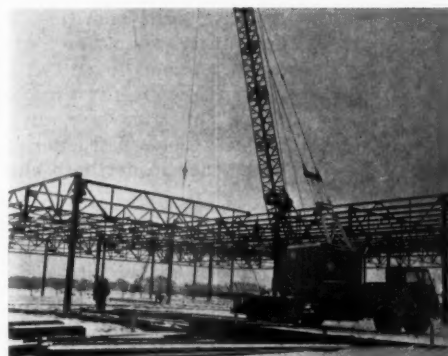
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Winter
ork

Cold weather construction

Though two sets of popularly known alphabetical designations — D.E.W. and I.G.Y.—are literally poles apart, both indirectly contribute to our knowledge of cold weather construction. The Distant Early Warning (DEW) line project, a radar network across the top of North America, is teaching construction men what can and what cannot be done north of the Arctic Circle. As part of the International Geophysical Year (IGY), a task force has established American bases at the South Pole for gathering various scientific data. Moreover, the construction of these Antarctic outposts, at high altitudes and in intense cold, had added considerably to the knowledge of what may be accomplished with men, materials, and equipment under exceedingly adverse weather conditions.

In this annual Winter Work issue, we are presenting a dozen or more feature articles on cold weather construction from the Greenland Ice Cap to the Ross Ice Shelf and McMurdo Sound in the Antarctic. Construction at these locations, of course, offers climatic extremes that will hardly be experienced elsewhere. But in coping with these special problems in the high latitudes, men have amassed a sound background of construction experience in handling difficult and dangerous assignments in cold weather areas. This know-how will prove useful as the construction season is lengthened in northern climes in or-

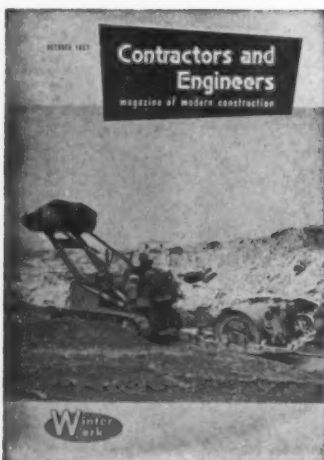
der to fulfill building programs and meet project completion dates.

Arctic and Antarctic experts have turned nature into an ally rather than an enemy. In pushing a road over the Greenland Ice Cap (pg. 66), bridge builders supported a steel superstructure on piles frozen deep in holes augered into the ice. Highway crews learned to cope with permafrost and under-snow melt streams. Glacial ice was used for a subgrade, and extreme care was taken in selecting borrow material for foundation courses. At the South Pole, a new concept in building design was developed for the IGY bases (pg. 24). Extremes of wind velocity, snow loads, and temperature differentials were essential criteria under consideration in the construction of these buildings.

While such extreme conditions are encountered only in the polar regions, the average contractor working in the north temperature zone has problems, too, in his winter construction. Some successful methods used to overcome typical problems, detailed in articles in this issue, may be of help to contractors working this winter. While

U. S. firms are doing more and more cold weather work, Canada has been carrying on a considerable amount of winter construction, far greater proportionately than has the United States. This has been especially noted on the St. Lawrence project. One way of keeping up with the federal road program is to extend our own construction season further into the winter months. This may be done on grading and bridge work more readily than on paving. The use of insulated forms, blanket insulation, tarpaulins, gas-burning or steam heaters for warmth and concrete curing have permitted building construction to be carried on through cold weather. The same methods could be used more widely in constructing bridges and other concrete structures.

In the past, when winter work knowledge and equipment were limited, contractors were inclined to shut down their jobs through the cold weather months. Many now feel that it is more economical to work through the winter, rather than stop in the fall and then reassemble crews and equipment to start again in the spring.



Backfilling a tunnel connecting the heating plant and manufacturing building of the new Caterpillar Tractor Co. plant near Aurora, Ill., demands special attention in winter. The Cat D6 tractor with Traxcavator loader compacts the 18-inch lifts with a Vibro-Plus vibrating roller equipped with an air-cooled engine.

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OCTO

Lightweight piling and wellpoint system keep foundation dry

Lightweight piling helped E. J. Albrecht Co. work in the dry on the Calumet Skyway job in South Chicago, despite troublesome ground conditions.

Before digging out a 50x50-foot foundation for a pumping station which will draw storm water off the highway, the contractor sank 18-foot-long wellpoints, 5 feet on centers, around the pit. Albrecht installed a 6-inch pump to the wellpoint ring to pull out the water.

The Chicago contractor was down about 16 or 17 feet, excavating with a crane and Owen 1½-yard clamshell, when he hit very fine sand. To help control the water, Albrecht's superintendent got on the phone and ordered sheet piling—and he wanted it fast. Within 24 hours, 160 pieces of L. B. Foster lightweight piling were on the job.

In just two days, Albrecht had it all in place. This LBF 1510 piling measures 15 inches wide and weighs only 8.6 pounds per square foot. Since each sheet is 9 to 11 feet long, a couple of men were able to tilt each piece into position. This lightweight piling interlocks from the side, and the men only had to slide the sheets together. There was no need to hoist them overhead and interlock them from the top. Even inexperienced workmen had no trouble with the piling.

Piling was driven by two work gangs, each wielding a paving-breaker-type air hammer and tapping power from a Schramm 125-cfm compressor. Each piece was set up, interlocked, and driven a foot into the troublesome clay in about five minutes. Albrecht averaged 12 to 15 pieces per hour.

As the excavation progressed, Albrecht drove each piece 3 feet deeper into the tough clay with a pile driver attachment on a crane and a hammer weight of 1,000 pounds. The piling went in quickly and easily, and the excavation was carried out to the desired elevation—about 21 feet deep—with men working in the dry.

Albrecht rented the piling from L. B. Foster Co., and once the foundation was complete, extracted the piling in 2½ days. Albrecht simply inserted pulling shackles into the pre-bored holes near the top of each sheet and hoisted away with a crane. When pulled, each sheet looked as good as new. Albrecht's use of a Foster designed driving head helped prevent end batter, despite blows by the hand-held air hammer and the 1,000-pound weight rigging the pile-driver leads.

THE END

Two gangs of workmen use paving-breaker-type air hammers to drive the 15-inch-wide and 9 to 11-foot-long L. B. Foster sheet piling into clay around the site of a pumping station that will draw water from the Calumet Skyway in Chicago.



There is a type of asphalt pavement to fit the need

For example, on this highway—78 miles from contractor's asphalt plant—
Texas laid hot-mix, cold-laid Texaco Asphaltic Concrete



Blade graders spread the hot-mix, cold-laid Texaco Asphaltic Concrete surface in a series of thin layers.



Multi-wheel rubber-tired rollers are used for initial compaction of asphalt surface.



A 10-ton three-wheel roller gives final compaction to Texaco Asphalt pavement on U.S. 290 in Texas.

Contractors

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San Antonio, Texas

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The variety of road and street types which may be constructed with Texaco Asphalt products offers an important advantage to the road builder. These types differ in durability and in cost. One of them will supply the right answer to your paving problem, whether you are constructing a highway or street, airport or parking area.

In the case of the Texas state highway pictured here, the project was located 78 miles from the contractor's asphalt plant. This called for a type of asphalt mix which, after the long haul from the plant, still retained its workability when delivered on the job. The answer was hot-mix, cold-laid Texaco Asphaltic Concrete. Laid on a crushed stone foundation and a subbase of select material, it provides a durable yet economical pavement. Completely flexible from subgrade to surface, this pavement will absorb heavy impact year after year with a minimum of upkeep.

In plant-mixed types of Texaco Asphalt paving, either asphalt cement or cutback asphalt is used as the binding agent. Helpful information on methods and materials recommended for this important class of asphalt pavements is supplied in the booklet, "Plant-mixed Texaco Asphalt Paving." Our nearest office will be glad to send you a copy.

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The thirteen-man discussion panel begins to assemble for the engineering seminar on "Economy in Foundations and Pavements." Navy engineers, architect-engineers, and contractors all had their say during the lively seminar at the first national reunion of former Seabees and Civil Engineer Corps officers.

Construction seminar held at Seabee Center reunion

An engineering seminar, one of the highlights of the first national reunion of former Navy Seabees and Civil Engineer Corps officers, was held during the fifteenth anniversary of the Seabee Center at Davisville, Rhode Island. Prominent civilian and military engineers took part in the seminar, held on September 6, which dealt with "Economy in Foundations and Pavements".

As is generally the case, when the same room holds the three factions of the construction industry—the owner, consulting engineer, and the contractor—adherence to the specific topic named was not strictly enforced.

Discussion panel

The discussion panel, consisting of thirteen men representing every phase of the construction business, had as its moderator Capt. Joseph P. Plichta (CEC), USN, District Civil Engineer and District Public Works Officer, First Naval District. Seven of the panel members made excellent formal presentations which were followed by equally informative open floor discussions.

The first speaker was Capt. H. Garner Clark (CEC), USN, Commander, Naval Construction Battalions, U. S. Atlantic Fleet. His presentation dealt with "Owners' Requirements". Capt. Clark outlined what an owner—in this case the U. S. Navy—is entitled to expect from the engineers and contractors employed to perform the actual work.

The architect and engineer, and their responsibility to the owner, was discussed most frankly, and specific items in which the Navy had found fault were outlined. One of these criticisms was the failure of the A&E to design a structure within funds known to be available for the purpose. It was felt that the engineering firm had the responsibility of keeping abreast of new and more efficient materials and machinery in order to construct a facility within the financial limits of the owner.

Capt. Clark also outlined many items which he felt contributed to a high construction cost for the owner. One of the problems in this area, Capt. Clark said, "was the constant tendency to inflict unjust requirements and to require unwarranted expense on the contractor, especially in meeting contingencies which have not been anticipated by either party and which could not therefore have been included in the contract". Another responsibility of the engineering firm handling the project, Capt. Clark added, is to assist the owner not only in securing a prime contractor but in helping to evaluate the competence of subcontractors used.

CONTRACTORS AND ENGINEERS

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MORE
Control · Comfort · Speed

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No other shovel-crane can match the easy, effortless, responsive operation of a Lorain—with the new 2-Lever, "Joy Stick" Power Controls. Now, only 2 levers meter positive power to all turntable clutches—at any desired rate for any degree of response, rapidly or slowly, a little or a lot. And the operator still retains the "old time" feel of all operations. By simply moving the easy-acting "Joy Stick" backward or forward—or side to side—or in-between to quarter positions—the operator obtains instant, responsive single clutch operation or a combination of actions. The result—happy operators—plus bigger shovel-crane production!

You'll want to see and try this newest of all ideas for shovel-crane operating control. Ask your Thew-Lorain Distributor to explain—and demonstrate—the new Lorain "Joy Stick" advantages!

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INEERS



Civilian and military engineers line up to view an M-R-S Model 200 tractor equipped with a load-transfer device, working with a LeTourneau-Westinghouse scraper in a demonstration of the load-transfer principle.

What an owner expects from a contractor are two main items, Capt. Clark said. The first is responsibility for providing efficient construction management. He criticized "horse-and-buggy-type" construction management and stated that contractors should provide proper advance planning—using modern methods and equipment—to do a more efficient job.

The second item covers the setting up of time schedules and completion dates realistic to both parties. Contractors should keep themselves informed of new techniques and machines that will help complete projects on schedule, Capt. Clark said, and not to use the time-urgency of the owner to justify the use of substandard materials and workmanship.

Another important item was mentioned by Capt. Clark, that of good public relations with the community. This is the responsibility of not only the owner—who has to inform the public what he is doing and why—but of the engineers and contractors.

During the floor discussion that followed Capt. Clark's address, an A&E representative criticized the Navy for the practice of reducing the original allowable budget after the cost of a project had been determined by the engineers. It was suggested that either the Navy or owner, as the case may be, reduce the scope of the desired project within allowable funds or increase the budget to permit construction to follow the original design. This action was felt necessary because the A&E as well as the contractor will be forced to use substandard materials and workmanship to stay within the reduced budget if the owner insists that construction follow the original design.

Design and specifications

Two men, representing architect-engineers and contractors, discussed many harmful items found in present design criteria and standard specifications. The first was Milton E. Nelson of the architect-engineering firm of Charles A. Maguire & Assoc., Providence and Boston.

Nelson discussed the responsibility of the architect-engineer, and stated that A&E firms should use new methods and materials in the design and construction of a project. These efficient techniques, it was noted, should take the place of the much-used

(Continued on next page)

A Caterpillar No. 12 motor grader, equipped with a Preco electronic blade control unit for accurate blading, goes through its paces for the group attending the seminar. Demonstrations like this tied in with discussions of new developments in equipment.



JOB REPORT FROM GOLDSBORO, N. C.

on the new CAT* DW15 (Series E)-No. 428 LOWBOWL Scraper

Whenever a new machine is introduced, this question comes up: "What'll it do on a job?" Reports from actual jobs in different sections of the country show there's a definite answer for you on the new Caterpillar DW15 (Series E)-No. 428 LOWBOWL Scraper. Compared with competitive units of similar capacity, this new earthmover heads the pack with high production.

Here are facts and figures from a contract on U. S. Highway 117 near Goldsboro, N. C. The contract, handled by S. T. Wooten Construction Co., Stantonsbury, involved moving about 3,000,000 cu. yd. of material in a section 2.3 miles long. The material was coarse, moist sand (70%) and clay (30%). Hauling loads of 14.1 bank cu. yd., the DW15 (Series E) unit averaged 7.02 round trips an hour on a 3,600-foot cycle. Details are shown in the box to the right.

From every angle, the new DW15 is designed for high production at low cost per yard. Its Caterpillar Engine packs 200 HP (maximum output capacity). With speeds up to 37.2 MPH plus the stability of four wheels, it delivers fast round-trip hauls with greater safety than two-wheel rigs. Its new wide-section 26.5 x 25 tires provide maximum flotation. And the new No. 428 LOWBOWL Scraper (13 cu. yd. struck, 18 cu. yd. heaped), provides a faster loading rate clear to the end of the loading cycle.

For comparative cost-of-operation figures on other actual jobs, see your Caterpillar Dealer. He's a source of reliable information. Ask him to show you proof that the new DW15 (Series E)-No. 428 can pay off for you! Name the date—he'll demonstrate!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

JOB DATA ON DW15 (SERIES E)-NO. 428*

Material: Coarse moist sand (70%) and clay (30%)	
Round-trip distance	3,600'
Average load time (min.)	1.06
Average haul time	3.28
Average turn and dump time61
Average return time	3.61
Average cycle time (incl. delays)	8.56
Average trips per hour	7.02
Bank cu. yd. per trip	14.1
Average hourly production (bank cu. yd.)	99

*The unit was push-loaded by a D8

CATERPILLAR*

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ONE GOAL: To concentrate our capabilities, resources and experience on the design, manufacture, distribution and service of job-tested heavy equipment.

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Here in one booklet is all the latest information on the new highway program. Find out how, where and when the money will be spent; standards for the new freeways, final routes of the Interstate System. Everything you need to know to share in the greatest construction job in history.

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Despite snow-covered frozen earth, an International Drott TD9 Four-in-One, used as a backhoe, spreads fill at the site of a new warehouse and office for the Firestone Tire & Rubber Co. This Cheektowaga, N. Y., project is being handled by E. R. Granda Construction Co., Cheektowaga.



A secondary road in South Dakota is cleared of snow by a Rivinius snow loader fastened to the moldboard of a Caterpillar motor grader. Standing by waiting for a full load is a Reo dump truck, which will haul the snow to a disposal area.

(Continued from preceding page)

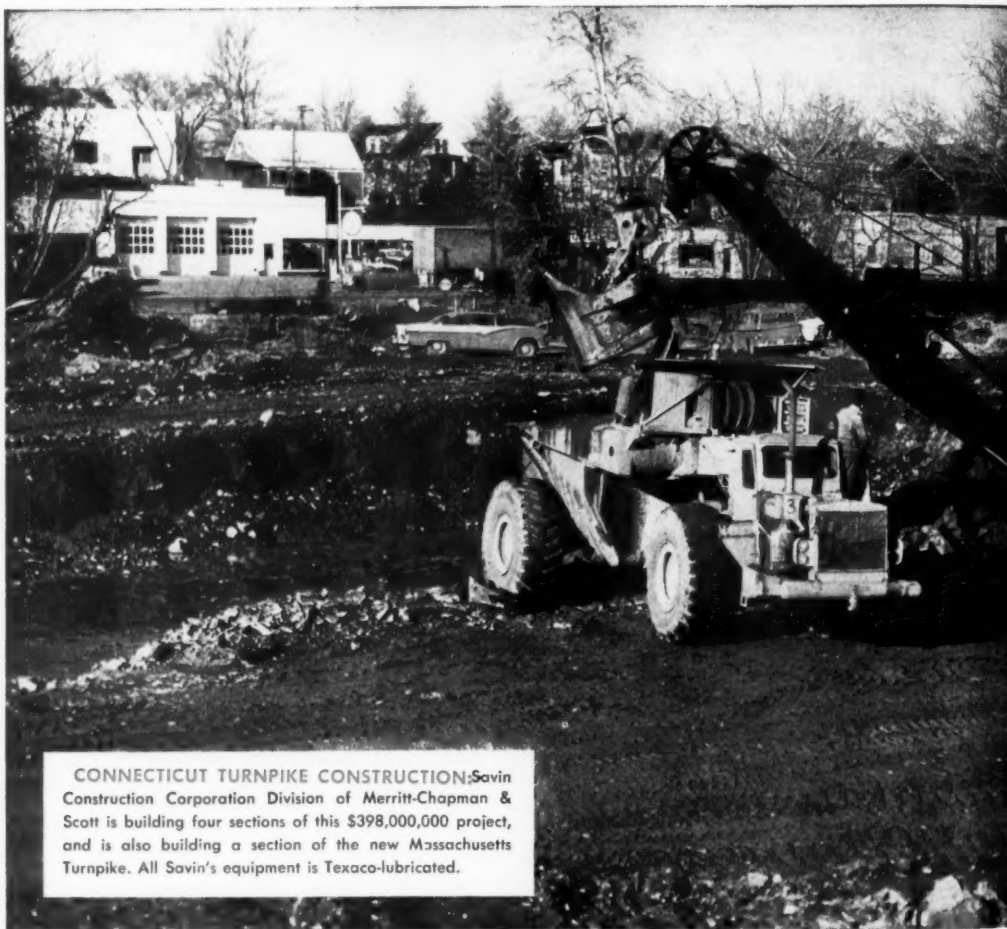
standard specifications that are generally out-dated and, if incorporated into a design, raise construction costs.

He conceded, however, that design criteria and standard specifications should be allowed, and are even necessary on specific military facilities. On other projects Nelson felt that specifications should be constantly brought up to date. He suggested that all standard spec should have supplements that are kept up-to-date, allowing the design engineers to use more economical materials and methods of construction. Specifications, Nelson felt, should not detail work methods, for this limits the ingenuity of the construction contractor.

Descriptive specifications of equipment or materials to be used needed revamping, according to Nelson. He felt that "descriptive specifications often have remarkable twins in the technical data and descriptions found in the catalogs of some manufacturers". This actually tends to limit the choice of equipment allowed, he added. A solution suggested by Nelson was "naming three or more manufacturers that are considered 'equal' at the outset with an 'or approved equal' clause attached to permit still further competition".

The second speaker in this category was Charles Richardson, representing the contracting firm of B. Perini & Sons, Inc., Framingham, Mass. He discussed and criticized specifications which do not remove uncertainties from the contract. This causes higher costs for the owner, he declared, because in the past years, contractors have had to guess and "provide contingencies for many uncertainties resulting in higher bid prices to the Navy."

Architect-engineers were criticized by Richardson for not giving enough study to the driving resistance of piles and for the limited information on this subject in specifications. He illustrated this by relating past experiences with specifications that gave various definitions of practical refusal. During his many years in marine construction, Richardson stated, engineers have called for anything from 6 to 60 blows to the inch for pile refusal. This vagueness on refusal,



CONNECTICUT TURNPIKE CONSTRUCTION: Savin Construction Corporation Division of Merritt-Chapman & Scott is building four sections of this \$398,000,000 project, and is also building a section of the new Massachusetts Turnpike. All Savin's equipment is Texaco-lubricated.

"...help greatly to keep our jobs

SAVIN CONSTRUCTION CORPORATION
Division of Merritt-Chapman & Scott, East Hartford, Connecticut, operates well over a thousand pieces of construction equipment. All of them are lubricated exclusively with Texaco—and have been for years. Let Savin tell you why—**"Texaco lubricants and service have never let us down. Texaco Lubrication Engineers work closely**

with us on our jobs and their recommendations in addition to giving our equipment the protection it must have—help greatly to simplify our lubrication procedures, keep our maintenance costs low and our jobs on or ahead of schedule."

The Texaco Simplified Lubrication Plan used by Savin includes such famous products as **Texaco Marfak Heavy Duty** for wheel bearing



TEXACO



A snow storm does not hamper this International TD-18 crawler from backfilling a trench on the Baker River project of the Puget Sound Power & Light Co. of Seattle, Wash. The project, part of a water-storage dam and power plant, is being built by Stone & Webster Engineering & Construction Co., New York, N. Y.



Cold winter weather does not prevent dredged material from being delivered through Naylor Spiralweld pipe for Tuttle Creek Dam near Manhattan, Kans. Planned by the Kansas City District of the Corps of Engineers, this dam is one of the key units in the Kansas River Basin flood control system.



and the lack of information on pile lengths, character of underlying material, and disposition of obstructions has forced contractors to guess their way during work and made for higher contract costs.

New equipment developments

Robert P. McKenrick, executive vice-president of the Construction Industry Manufacturers Association, discussed the refinements that have continually increased the efficiency of existing equipment without radically changing its appearance. Referring to the equipment displayed at the Road Show in January, he said that "new developments had taken place in the performance of that equipment. Construction machinery has been increased in efficiency and capacities up to 50 per cent over similar equipment shown in 1948 without greatly changing the appearance of the tool itself."

This he illustrated by outlining the increased efficiency of today's concrete-paving equipment and batch plants, as compared with the pilot models back at the turn of the century. He mentioned such new equipment as the concrete slip-form paver, which eliminates the use of forms; new bituminous pavers; grading and compacting machinery; and the new Blaw-Knox impact separator, which separates soft, non-durable particles from sound hard stones to be used as coarse aggregates for concrete.

Construction techniques

The use and manufacture of prestressed-concrete, hollow-cylindrical piles were explained and illustrated with slides by Charles B. Kiesel, Jr., manager of the prestressed department, Raymond Concrete Pile Co., New York, N. Y. Various bridge projects were discussed on which these Raymond piles replaced the usual cofferdam method of pier construction at substantial savings.

Reduced construction costs are possible with this technique, according to Kiesel, because it affords savings in design time; the piles have a high load capacity combined with great bending strength; the hollow piles allow the maximum use of precast, prestressed bridge components, thus saving construction time; and durability

Jobs on or ahead of schedule"

For general lubrication, *Texaco Universal Gear* lubricant EP for transmissions and differentials, *Texaco Regal Oil R&O* for air compressors and hydraulic equipment, *Texaco Ursa Oil Super* for engines.

Let a Texaco Lubrication Engineer develop a Simplified Lubrication Plan for your projects.

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The Texas Company, 135 East 42nd Street, New York 17, N.Y.

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 205



A thick layer of ice and snow on a Minnesota country road is broken into small pieces by a Lull Engineering ice roller-crusher mounted on a maintenance truck of the Minnesota Department of Highways. After the 16 wrinkled disks break up the ice, a snowplow will push it to one side of the road.



Working in the early hours of the morning, New York City's Department of Sanitation gets busy clearing the streets of snow. The department's Trojan tractor with its 2-yard bucket, moves in close to the sideboards of the truck to dump a load of snow.



UPPER: This EIMCO 105 FRONT-END LOADER barely had its "wraps" off before being initiated into the MANAFORT BROTHERS' work force...clearing debris from a million dollar fire in the heart of the business district, Meriden, Conn. Says ANTHONY (TONY) MANAFORT, president: "We took a long look at the tractor-loader market and finally chose Eimco. After its performance at Meriden, we're glad we did; it fits our needs to a T."



LEFT: In New England — wherever antiquated structures are being razed to make room for modern offices, factories or dwellings...or where there's a tough clean-up project going on...it's very possible you'll find MANAFORT BROTHERS on the job. And you'll likely find one (or any combination of) the MANAFORTS around to see that work is moving on schedule. Introducing them left to right: ANTHONY, brothers PAUL AND FRANK and son JIM.

"Our Eimco 105 made a 'hit' with us on the first job..."

This comment by Anthony (Tony) Manafort referred to the satisfaction of he, his brothers Paul and Frank and his son Jim, in their new Eimco 105 Front-End Loader after it had speedily cleared debris from a \$1 million fire in Meriden, Conn.

Since it's their business to remove the "old" to make way for the "new"...it's normal for the Manafort Brothers of New Britain, Conn., to do their own "wrecking." But tough, unscheduled clean-up jobs such as the Meriden fire have a way of sneaking in on a busy work calendar...an important reason why the Manafort Brothers must continually plan for faster equipment to handle more and bigger jobs.

"We depend on our tractors to do a lot of different jobs," Tony explains, "pry-out concrete, knock down brickwork, dig and load fast, tow, push, grade...or a dozen other things. They have to be rugged

'cause we can't afford to baby equipment to keep it working. The Eimco has given us top performance on every job."

It's easy to understand why the Manafort Brothers enjoy satisfaction in the outstanding performance of their Eimco 105. With independent track reversal, it maneuvers fast and sharp; power shifts provide quickly responsive, precise control from full reverse to full forward speeds with a minimum of physical exertion; from his up-front position, the operator works faster with more accuracy at less strain; Eimcos stay at work without excessive, time-consuming delays for maintenance and repairs, and they offer outstanding front-end versatility for handling scores of different jobs, economically.

Let us tell you more about this busy money-maker!

(Continued from preceding page)

and maintenance-free qualities are inherent in prestressed, high-strength, quality-controlled concrete.

New material developments

The last two speakers discussed the merits of cement and asphaltic concrete as construction materials. First, Gordon K. Ray, from the highway and municipal bureau of the Portland Cement Association, presented a talk on the design and construction of concrete airfield pavements—a type of construction which has been going through radical changes as increases have been made in the weight and wheel-loading of our new jet aircraft.

The resultant pavement thicknesses have therefore required heavy-duty concrete equipment to be developed. Equipment discussed by Ray included high-production batch plants to feed multi-paver concrete spreads; internal vibrators attached to spreaders for slab thicknesses over 12 inches; and new finishing machines being developed to incorporate the transverse and longitudinal finishing operations. He also spoke on the development of grinding equipment which, because of the exact surface tolerances required, eliminates high spots on the concrete pavement; and new rigs to cut or form joints in the concrete slab.

Ray elaborated on the use of diamond and abrasive blades in sawing concrete. He pointed out that abrasive blades are more economical to use, since they can cut dry concrete, while diamond blades require a water supply for a spray. However abrasive blades are suitable only in concrete made with softer coarse aggregates such as limestone, slag and coral. New equipment developments in this phase, such as the Seaman-Andwall Vibrajoint machine, which allows joints to be sawed with an abrasive blade regardless of the type of coarse aggregate used, were also discussed by Ray.

Another method mentioned was the forming of joints with asphalt-impregnated felt filler during paving. This can later be sawed with a dry abrasive blade before sealing is done.

Dillard D. Woodson, staff engineer for the Asphalt Institute, explained

THE EIMCO CORPORATION

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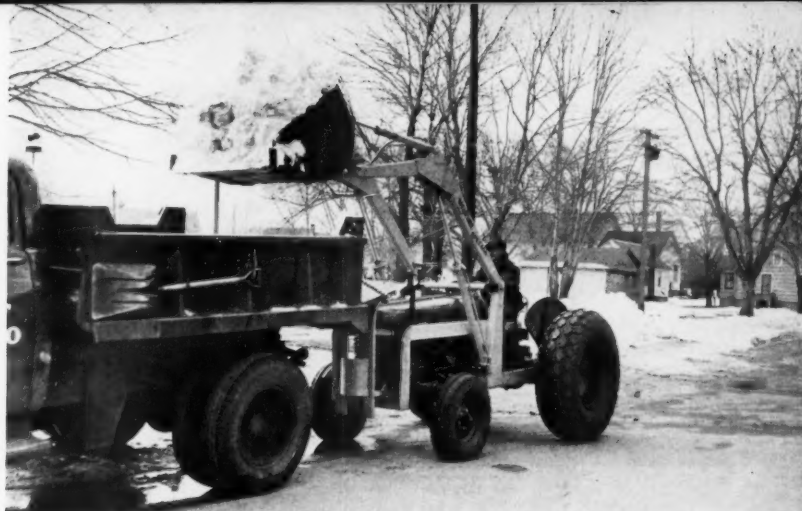


B-219

For more facts, use Request Card at page 18 and circle No. 206



Over 800 horsepower churns away in borrow area on the Michigan Turnpike project near Grand Rapids. A twin-engine 436-hp Euclid TC-12 tractor push-loads a 375-hp Michigan 310 tractor scraper in less than a minute. L. W. Edison Construction Co., Grand Rapids, holds the contract for this job.



Clearing the streets after a heavy snowfall in Peshtigo, Wis., this Shawnee special heavy-duty loader and snow bucket is ready to unload snow into a dump truck. The bucket and loader are attached to an International 300 Utility tractor, owned by the Peshtigo Street Department.

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the new simplification system of classifying various grades of asphalt before discussing new construction techniques being used.

Woodson discussed the asphalt-treated base course, which makes it possible to reduce the thickness required for untreated base courses. The advantages in the use of an asphaltic-concrete base course, according to Woodson, are speed of construction; earlier handling of traffic; and ease of control that can be maintained during mixing and paving operations.

Other innovations in asphalt construction mentioned and illustrated by slides was the increasing use of asphalt curbs and gutters, which cost 30 to 50 cents per linear foot; and the use of emulsified asphalt slurry seal which enables the paving engineer to refinish an old paved surface at an economical cost.

An interesting, and almost heated, discussion developed from the audience on various ways to construct pavements during below-freezing temperatures. Both the asphalt and concrete representatives outlined ways in which it was possible, though very costly, to construct pavements during the most adverse weather conditions.

Other panel members

In addition to the seven speakers, the discussion panel consisted of Col. Franklin Johnson, U. S. Army, Assistant Division Engineer for Military Construction, New England Division, U. S. Army Corps of Engineers; John L. Hayden (A&E), Hayden, Harding & Buchanan, Inc.; G. G. Werner, Jr., Merritt-Chapman & Scott Corp., New York, New York; Joseph Vallone, Commissioner of Public Works, State of Rhode Island; John O. Morton, Commissioner of Public Works, State of New Hampshire; and John A. Volpe, John A. Volpe Construction Co., Malden, Mass.

THE END

Clayton appoints manager

W. D. Loudon has been promoted to central regional manager for the Clayton-Kerrick Steam Cleaner and Dynamometer Divisions, Clayton Mfg. Co., El Monte, Calif. Loudon was formerly sales representative and a manager at the Cleveland branch.

GINEERS

OCTOBER, 1957

Tru-Seal Rim
by Goodyear



The Rim that put Tubeless Tires in this picture



ON jagged rocks, up steep grades, over rutted roads—today you can use tubeless tires almost anywhere—enjoy all the benefits of this great advance in tire construction.

One big reason is the development by Goodyear of the Tru-Seal Rim. This is the rim that has been adopted as standard by the Tire and Rim Association for tubeless replacement of all conventional tire sizes 12:00 and larger.

Tru-Seal is the only practical method yet devised to seal a multiple-piece rim. It adds one more to the many benefits Goodyear's vast tire-building experience brings to rim construction. With Goodyear rims, you profit by such advantages as:

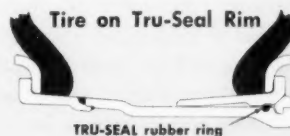
Unusual Strength: Thanks to an exclusive double-welding process, and added support at points of greatest stress, present-day Goodyear Rims are far stronger than previous rims.

Ease of Tire Mounting: No tube and flap troubles.

Special Tools: Goodyear alone provides both hydraulic and hand tools especially made for larger wheel sizes.

Bond-a-Coat Finish: This protective coating affords long-lasting resistance to rust and corrosion.

If you have a rim problem, why not talk it over with the G.R.E. (Goodyear Rim Engineer). He'll save you time and money by helping you select the type and size of rim best suited to your needs. Write him at Goodyear, Metal Products Division, Akron 16, Ohio, or contact your local Goodyear Rim Distributor.



New Tru-Seal Rims — for sizes 12:00 and up, including all earth-mover and grader sizes. This rim is similar to multiple-piece rims now in use—PLUS airtight Tru-Seal rubber ring which compresses into sealing groove when tire is mounted.

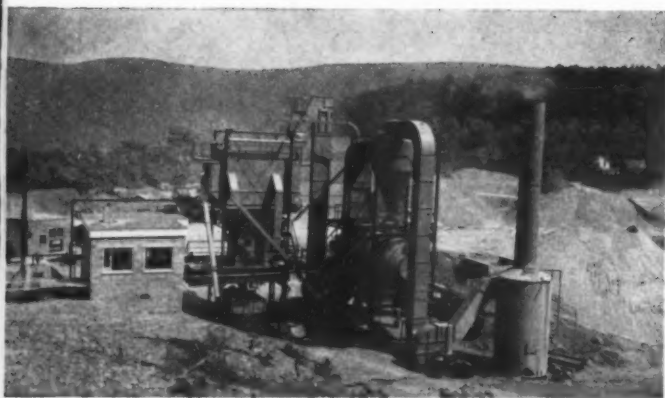
Buy and Specify

GOODYEAR

MORE TONS ARE CARRIED ON GOODYEAR RIMS THAN ON ANY OTHER KIND

Tru-Seal—T.M. The Goodyear Tire & Rubber Company, Akron, Ohio

For more facts, use Request Card at page 18 and circle No. 207



In this rear view of the plant, a truck waits under the hopper for a load; time for the full mixing cycle was approximately 55 seconds. The plant is expected to achieve a production rate of more than 200 tph.

Big modern asphalt plant permits a flexible operation

Flexibility is the keynote of the new Simplicity S-200 asphalt plant recently set up by Nittany Materials, Inc., of State College, Pa., at the Bos-sardsville, Pa., quarry of the Hamilton Stone Co. Four sizes of aggregate can be dried and stocked in separate bins, ready for mixing at a moment's notice, with the entire charging-drying-mixing operation performed

through remote control by one man.

The raw pit material, processed through a plant made up of a Cedarapids 20x20 double-impeller-type impactor, a Symons 36-inch gyrosphere, and a Cedarapids 25x40 jaw crusher, is crushed into five sizes. Produced at a rate of about 160 tph, the crushed aggregate consists of sizes No. 1, 1B, 2A, 2B, and 4. For fine aggregate, silica sand is hauled in from a source 14 miles away.

Reclaiming tunnel

The aggregate is stockpiled in a straight line over an underground tunnel 150 feet long, lined with corrugated metal pipe 60 inches in diameter. Located beneath the various stockpiles and intruded into the top of the tunnel wall, are four Syntron F-44 feeders, each rated at 100 tph. Push-button-operated from the plant's control room, these feeders deposit the required size and amount of coarse aggregate and sand onto a conveyor-belt assembly running the length of the tunnel. The material is conveyed at a speed of 350 fpm to the Simplicity plant's cold bucket elevator—situated at the mouth of the tunnel—to be lifted into the dryer.

The dryer unit, 10 feet in diameter and 20 feet long, is of double shell design: material flows in a continuous loop through the outer shell and back through the inner shell to emerge at the end at which it was introduced.

The Hopkins low-pressure burner in the dryer uses No. 4 fuel oil, which is stored in a 10,000-gallon tank adjacent to the dryer. Exhaust from the dryer is washed before being discharged into the air.

After being dried, the material is carried by the enclosed hot bucket elevator to a Symons horizontal 5x14-foot, 3-deck vibrating screen, where it is segregated into four sizes: No. 8; No. 4; 1/2-inch; and 1 1/2-inch; and stored in separate compartments. The total capacity of the bins is 50 tons.

Asphaltic cement is trucked by Nittany and American Bitumuls rigs from the latter's refinery at Barber's Point, N. J., and introduced by gravity flow into two 20,000-gallon storage tanks at the plant. A Hy-Way hot oil heater is used to keep the stored asphalt at the required temperature. Transfer of the asphalt from the storage tanks to the plant's 8,000-pound pugmill is done by a Kinney pump.

Power for the all-electrically-operated plant is tapped from the municipal power line. Electric motors are Wagner and General Electric units. All reducers are Falk.

The first job supplied by this new Simplicity S-200 called for approxi-

(Continued on page 14)



The teamwork of All-Wheel Drive and All-Wheel Steer makes the A-W Grader as sure-footed as a mule, regardless of terrain.

AUSTIN-WESTERN GRADERS PROVE

**You can make more money
with All-Wheel Drive and All-Wheel Steer**

All the wheels are working for you in an Austin-Western... there's no lazy, dead weight on the front end to lower operating efficiency. Live climbing power in the front wheels puts 30% more dirt-moving drive where it makes money for you—at the blade. This same climbing power takes the A-W grader through the toughest kind of footing, lets you work when other graders are bogged down. And equipped with the optional torque converter, it assures smoother power application and, even more important, less operator fatigue.

Another big advantage is All-Wheel Steer. This takes you in and out of the tight places and permits complete control of the rear end. Working as a team, All-Wheel Drive and All-Wheel Steer enable you to go places and move things impossible with other machines.

For controlled power, operator efficiency, and true economy of operation, invest in Austin-Westerns. You'll find them by the day, month and year the best profitmakers in the business. Write today for complete information.

Power Graders • Motor Sweepers • Road Rollers • Hydraulic Cranes



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ONLY THE WESTINGHOUSE POWER SHIFT TRANSMISSION GIVES YOU ALL 3



1

4 SPEEDS FORWARD, 4 REVERSE

2

COMPACT, INTEGRAL DESIGN

3

500 FT-LBS TORQUE CAPACITY



The new power shift transmission by Westinghouse is designed for use on engine-driven equipment used off the highway where multi-speed operation is required.

Consisting of a torque converter and a power transmission compactly designed in an integral housing, the Westinghouse power shift transmission combines in one package the desirable features of the hydraulic torque converter, fluid coupling and power shift transmission. The entire unit is less bulky, takes less space . . . can be less expensively installed and maintained.

With four speeds forward and reverse, the Westinghouse power shift transmission is ideally suited for vehicles which must travel in both directions during a normal work cycle. Using the simple, rugged counter-shaft principle with constant-mesh gears, field maintenance is reduced to a minimum. The transmission has two ranges, with each range having two speeds, both forward and reverse. (A high range for high vehicle speeds at moderate loads and a low range for low vehicle speeds at heavy loads.)

Simple to operate, a flip of the operator's lever accomplishes power shifts within each range, including forward and reverse . . . and without any interruption of power flow through the transmission and drive.

Automatic feature of the converter and ease of power shifting simplifies operator training and substantially contributes to longer operating life of the equipment. Absence of clutch pedal assures smooth, maximum traction acceleration.

Rated at 500 ft-lbs maximum input torque, the Westinghouse power shift transmission can be used with a wide range of internal combustion engines . . . including the Continental PE-200-1; Cummins HRBB-600, JT-6, JBS-600; General Motors 4-71, 3-71; Hall-Scott 590; Waukesha 140-GZB, 145-GKB, and many others.

J-07363

CHECK THESE SPECIFICATIONS:

GEAR RATIOS	LOW RANGE	FORWARD AND REVERSE
1st gear		6.85
2nd gear		3.43
	HIGH RANGE	
3rd gear		2.14
4th gear		1.07

OPTIONAL EQUIPMENT: Direct connection to engine fly-wheel; converter tail shaft governor drive; speedometer drive; parking brake.

FOR MORE INFORMATION

fill in coupon and drop it in the mail today. Your free copy of the new, timely WESTINGHOUSE TRANSMISSION DESIGN REPORT will be rushed to you immediately.

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For more facts, use coupon, or Request Card at page 18 and circle No. 209



The single mixman faces the remote-control console in the air-conditioned room. The Minneapolis-Honeywell register on wall at left thermostatically governs burner temperature. Visible through window is one of the plant's two Hardy scales.

(Continued from page 12)

mately 10,000 tons of asphalt pavement. The work was some 38 miles from the plant, and involved widening, reconstruction, and paving over old cement-concrete on State Route 209, which runs parallel to the Delaware River, from Dinghman's Ferry to Milford, Pa.

Thirty-five hired trucks were used to haul the hot-mix to the job, and these carried from 9 to 16 tons each, depending upon their size.

The 2-inch binder course consisted of 66.7 per cent Pennsylvania No. 2B coarse aggregate, 28.6 per cent sand, and 4.7 per cent asphalt.

The 1-inch wearing course consisted of 56.5 per cent Pennsylvania No. 1B coarse aggregate, 37.6 per cent sand, and 5.9 per cent asphalt. The asphalt had a specified penetration range of 85 to 100.

Mixing temperature for both mixes was 280 degrees, with the full mixing cycle taking about 55 seconds.

Material was placed by a Barber-Greene finisher, and the entire paving operation was supervised by Lloyd Imbt. Compacting equipment used on the job included three Buffalo-Springfield 3-axle tandem rollers, rated 18 to 21 tons; one Huber 12-ton, 3-wheel roller; and one Buffalo-Springfield 12-ton tandem roller. On this job, the Simplicity plant averaged an output of 183 tons per hour.

Remote control

A feature of the S-200 is its central control panel, from which all operations—proportioning of cold aggregate, weighing, mixing, timing, and temperature—are push-button-controlled by a single mixman.

The console itself is a Hardy unit, as are the two scales for weighing the asphalt and aggregate. Thermostatic control of the mixer's Hopkins burner is incorporated into a graph-type register supplied by the Minneapolis-Honeywell Regulator Co. Installed in the control room within easy reach of the mixman, the register also affords a permanent, daily record of mixing temperatures.

The control room itself—both for operator comfort and dust elimination—is air conditioned, as is the inspectors' office on the level below. This improvement was made by Nittany.

How to widen streets fast



This No. 977 Traxcavator* digs concrete, asphalt and compacted earth, loads a truck every 2 minutes, grades as it goes



Vogel Construction Corp. was widening 1.6 miles of 38th Street, Indianapolis, Ind., when this picture was taken. The job included excavating 40,000 cu. yd. of old concrete, digging up front yards and driveways. Street width was increased from 40 to 80 feet. And most of the work was done by a CAT* No. 977 Traxcavator.

Hard earth, broken concrete and asphalt are tough materials to dig, but the machine's superior pry-out action resulted in full bucket loads. The main problem was keeping enough trucks under the bucket. The No. 977 was loading a truck in less than 2 minutes, and it maintained a good level grade as it dug. Vogel Construction Corp. also found the No. 977 good at skimming asphalt off of old pavement.

Caterpillar-built Traxcavators have been designed for one purpose—to increase your production and cut costs. The No. 977, largest of the line, gives you the power and performance for big road jobs. Its 100 HP engine and ample track surface back up the 2¼ cu. yd. bucket with

tremendous digging force. Quick-acting hydraulic controls add to the machine's great maneuverability. It's easy to operate and has maximum job visibility.

Balanced weight distribution makes for good stability on rough terrain or steep grades. The 40-degree tilt-back of the bucket at ground level prevents spillage. And the bucket can be raised almost 12 feet for high load clearance.

Get the full story of this rugged, modern excavating tool from your Caterpillar Dealer. He'll demonstrate the No. 977's performance on your own job, and he stands behind its long, profitable work life with dependable service and parts you can trust.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.

**BUILT FOR
THE HARD WORK**



A conveyor belt assembly running the length of the reclaiming tunnel feeds sand and aggregate to the cold bucket elevator for lifting to the dryer. Materials are selected and measured by remote control.

The S-200 was erected in 30 days. Though technically the plant is a semi-portable unit, Nittany considers this one a permanent installation.

Plant superintendent is Joseph W. Heckert. K. P. Swift is in charge of design and control of the mix.

John H. Rath, general superintendent for the firm under Herbert R. Imbt, president, expects to produce high-quality material at production rates exceeding 200 tons per hour with the new plant.

THE END

CONTRACTORS AND ENGINEERS

For more facts, use Request Card at page 18 and circle No. 210

Planning and production: Scheduling and controls

by **GEORGE E. DEATHERAGE, P. E.**
construction consultant



Scheduling on a complex installation for manufacturing plants requires a considerable amount of attention to detail, but once the scheduling procedure has been mastered, parts of it can be easily adapted for simpler operations.

When the job includes thousands of pieces of equipment and types of material, the Production and Planning Department will have to devise some means of centralizing all the required information for handy reference. This is easily done with the use of Job Data Sheets.

This sheet, as shown in Figure 1, is used by the checkup engineers in the Planning Department for assembling data on construction work orders. A set of these sheets is prepared and maintained for each job, from the time the design report is issued until the work is finished. Thus, at any time during a job, the Job Data Sheets for a work order furnish all pertinent information concerning the status of drawings and materials, and serve as an index to all information concerning the work order.

The Job Data Sheets serve several purposes. They are the main source of information for preparing the weekly job checkup; they are a ready source of information for any department; they show the status of a job in general or of any particular detail of a job. If necessary, the sheets can be blueprinted or photostated for anyone requiring a complete record of the work order.

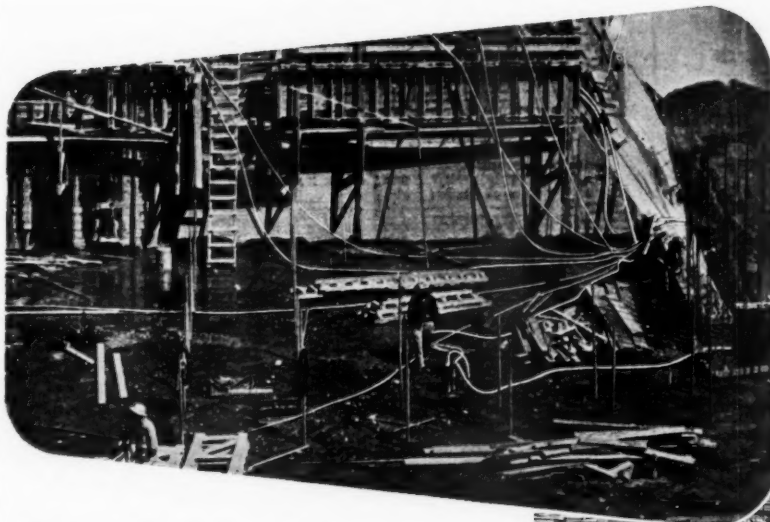
Setting up a Job Data Sheet

When a new work order or design report is received, the job is immediately turned over to a checkup engineer who sets up the Job Data Sheets. This work is important, since sheets that are well prepared can easily be kept up-to-date throughout the work.

First, the work order number and title are entered in the appropriate spaces. Every sheet used carries this

(Continued on next page)

This is the twenty-second in a series of articles on Construction Management by George E. Deatherage, P. E., construction consultant. The articles are based on an eight-volume "Manual of Advanced Construction Management" published by Geo. E. Deatherage & Son, P. O. Box 921, Lakeworth, Fla. The manual is used in a training course for superintendents and project managers, and is directed primarily at those contractor employees who have reached the foreman level or its equivalent, and who need practical help in order to take complete charge of construction projects themselves.



Gates construction hose is used extensively on one of world's largest engineering projects—the St. Lawrence Seaway.

The Gates Hose you want...when you want it!

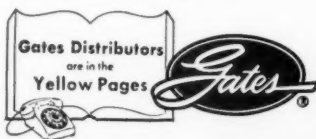
Gates distributor stocks are quickly available everywhere, and you can be sure of getting the right hose for any construction job. Three of the most popular types are:

35B Gates General Purpose Water Hose for long life in rough service. A superior hose for all types of wet-down service... for concrete making... for discharge on small pumps.

This hose is built especially for rough service under all kinds of weather conditions. And it won't chip or scuff off. High or pulsating water pressures are easily handled by Gates 35B. Extra long service life of this hose means money saved. Available in long continuous lengths... 1/2" through 1 1/2" inside diameters.

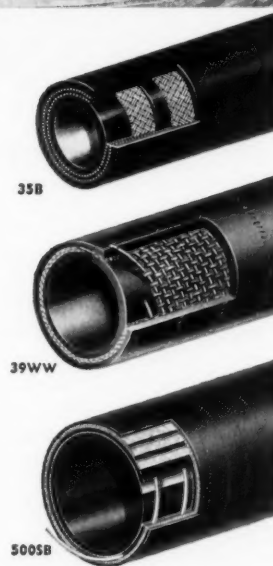
39WW Gates Water Suction Hose withstands extremely rough usage. An all-purpose heavy duty suction hose for use on intake side of any pump requiring hose up to 4" inside diameter. (Can also be used for discharge service.) Tough but flexible. Reinforcing wires and cords are interlaced to provide a strong, well balanced construction.

5005B Gates Heavy Duty Suction Hose with maximum crush resistance. Recommended for use on 4", 5" and 6" centrifugal, diaphragm and piston type pumps, this heavy duty hose has rugged spring steel wire and strong fabric reinforcing to make it practically crush-proof. Tube is compounded to handle abrasive fluids such as those encountered in sewer work. Made with inside diameters from 2" to 6".



The Gates Rubber Company
Denver, Colorado

The Mark of Specialized Research



TPA 165

Gates Construction Hose

For more facts, use Request Card at page 18 and circle No. 211

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GINEERS

When several drawings have to be entered against an account, they are entered under each other, except when there are many detailed drawings issued against an account. If the checkup engineer does not consider the numbers of any great importance, or if there are too many numbers for convenient listing, the drawing issue bulletin is recorded instead, prefixed by "Bul."

If one set of drawings is issued against more than one account, it is better to enter the drawing information against the lowest account and to note "Refer. Acct. No." opposite the other accounts.

Bills of Material

The original copies of all Bills of Material are routed through the Planning Department, and all except pipeline BM's are sent through the checkup engineers to be recorded in the Job Data Sheets. Line BM's are recorded in the Line List by another clerk handling all line status for all work orders. The checkup engineer records the BM number and issue in the proper column and on the same line as the account description and the drawing. The date is recorded in the BM Date column. All higher issues of BM's should cover material on the same account as the first issue, and all issues of a BM must be grouped together. If an issue does not cover material on the same account, the issue should be entered in proper numerical sequence, together with an explanation as to the material it covers or a reference to another account number.

When the original copy of the Bill of Material leaves the Planning Department, it goes to the Purchasing Department. If the needed material is not on hand, it is requisitioned. The requisition number is entered opposite the description of the material in the column headed "Requisition" on the BM. When the ditto copy of the Bill of Material is returned to the planning department, every item of material on the BM will be "covered" by a mark opposite the material in the requisition column. Either a stores symbol or a requisition number may be used.

Taking the Job Data Sheet, the checkup engineer enters the first requisition number of the BM in the column headed "Requisition No." In the column headed "Material", he makes a brief entry describing the material covered by the requisition. He follows this procedure until all the requisition numbers have been listed, one after another, on the Job Data Sheet. If material is being supplied from stores, the entry opposite the BM number is "Stores", indicating to the checkup engineer that the material is on hand. The engineer does not need to follow material coming from stores.

Purchase orders

Requisitions for material are authority for the purchasing agents to buy. All purchase orders are routed through the Planning Department

and to each checkup engineer. Each checkup engineer can pick out the purchase orders pertaining to his work, since the work order number is always shown on a purchase order after the title "Charge A/C".


A checkup engineer receiving a purchase order enters the purchase order number on the same line with the corresponding requisition number and in the column headed "P. O. No.". The date the order was placed is inserted on the same line and in the column headed "P. O. Date". In the four columns to the right of the "P. O. Date", the vendor's name is entered. The shipping information from the vendor is entered in the columns

(Continued on next page)


FIG. 125 ISSUE NO. 1		TIME SCHEDULE GEO. E. DEATHERAGE AND SON, INC.			DATE 2/11/52			
Construction Department					Sheet 1 of 2			
CONTRACT NO. 1470-B - Acme Wire Box - Drawing #84 - Gypsum Roof Slab.								
APPROVED ANSWER #53					Building: CD-50x200			
OFFICE SCHEDULE		UNIT			DESCRIPTION	JOB SCHEDULE		
Ck'd Dwg Reg'd	P.O. and Vendor	Acct. No.	Item No.	No. Pcs.		Deliv Date	Start Date	Comp'l Date
	Owner	1			Survey - Property Lines Set.	2/13	2/16	
	Owner	1			City Building Permit.	2/15		
	Owner	4-11			Clear Site.	2/16	2/18	
		4-26			Machine Excavation	2/18	2/21	
		4-29			Footings & Pier Excavation	2/21	2/26	
		See Plumbing			Exc. Sewer & Water Lines	Plumber		
	P.O. 1517	5-10	c.y.	35	Concrete - Footings	2/22	2/27	2/27
	P.O. 1517	5-10	c.y.	51	Concrete walls, Wall & Ramp	2/24	2/24	2/30
	P.O. 1517	5-13	c.y.	218	Concrete Floor Bldg.	4/5	4/5	4/15
	P.O. 1538	13-42		18	7/8x24" Mach Bolts with nuts	2/20	2/26	2/26
	P.O. 1540	6-22	s.f.	3000	1x6 Roofers for Forms	2/22	2/24	2/30
	P.O. 1540	6-22	s.f.	2000	Dim. Stock for Forms	2/22	2/24	2/30
	P.O. 1539	6-22	Rolls	2	Rolls - #8 Wire	2/20	2/24	2/30
	P.O. 1542	11-21	s.f.	12000	Sisalcraft Paper (curing)	4/5	4/8	4/15
	P.O. 1542	3-25		900	1x6 Asph. Exp. Jt.	4/2	4/5	4/15
	P.O. 1601	7-11	s.f.	12000	6x6x8 Wire Mesh	4/2	4/4	4/15
2/15	P.O. 1601	7-17	Rolls	1	#16 Black Wire	2/22	2/24	2/30
2/29	P.O. 1601	8-11	T -	12	Struct. Steel & Lintels	3/8	3/11	3/23

Figure 2

for temporary space heat at huge IOWA POWER AND LIGHT CO.



... or drying a
room of plaster



count on ...

HERMAN NELSON PORTABLE AIR HEATERS

everybody else does!



"UTILITY" MODEL
Interchangeable power plants—gasoline engine or electric motor. Gasoline or oil fired. Up to 425,000 BTU capacity




"DE LUXE" MODEL
Oil fired. Electric motor powered. Up to 450,000 BTU capacity. Completely automatic operation.



"THRIFTY" MODEL
Oil fired. Electric motor powered. Up to 165,000 BTU capacity. Low price!

Building a new Power Station in mid-winter called for safe portable heat ... so they chose Herman Nelson Portable Heaters! Whatever your winter job, in building or maintenance, get the same dependability with Herman Nelson. No other portable heaters give you such safety, ease of operation and trouble-free performance. Choose the fully automatic "De Luxe" ... the "Utility" with interchangeable power plants ... or the low-priced "Thrifty". You can buy or rent Herman Nelson Portable Heaters for every job need. See your dealer now!

Get free weather forecast service ... Mail Coupon TODAY



AMERICAN AIR FILTER COMPANY, INC.
Portable Products Dept. 200 • Louisville 8, Kentucky

Rush me complete literature on portable heaters. Also send your monthly Weather Forecast Chart, at no cost or obligation to me.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

For more facts, use coupon, or Request Card at page 18 and circle No. 213

Fig 126 Geo. E. Deatherage & Son, Inc.
DAILY EXPEDITING REPORT
FROM EXPEDITING DEPT. TO PLANNING DEPT.

MADE BY _____ DATE _____

P.O.	W.O.	ACCT.	ITEM	INFORMATION
1				
2				
3				
4				
5				
6				
7				
8				
9				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				

Figure 3

(Continued from preceding page)

headed "Ship. Inform." This should be done as soon as possible. Such information, however, is often not available for several days.

If the checkup engineer does not remember where the material is listed on the Job Data Sheet, he can note the requisition number on the purchase order and run down the "Requisition No." column on the Data Sheet. In many instances, the BM number is noted on the purchase order, and the engineer can run down this column to locate the material.

Shipping information

As soon as a purchase order has been placed, the expeditor obtains up-

to-the-minute shipping information from the vendor. This is entered on a "Daily Expediting Report", Figure 3, which is forwarded at the end of each day to the Planning Department to be routed through checkup engineers.

Each entry on the expediting report includes work order number, purchase order number, the vendor's name, and the expediting information. This information allows checkup engineers to identify the corresponding entry on Job Data Sheets and to enter the expediting information on these sheets. The corresponding entries on the data sheets are prefixed with either of two letters, X standing for the promised shipping date; S, for the date material was shipped. If the vendor does not furnish a date, the entry NX, for no promise, is made.

Receipt of material

On receipt of a shipment, the Receiving Department fills out a receiving report, a copy of which is routed through the Planning Department and the checkup engineers.

This report lists the date, the vendor's name, purchase order number, work order number, description of the material received, and the notation that the shipment either completes the purchase or is a partial shipment.

From this information, the checkup engineer locates the proper entry in his Job Data Sheets and enters the information in the column headed "Ship. Inform." after the existing entry has been erased. The date the material is received is also entered, and this is prefixed with either R, designating a complete shipment, or P, designating partial shipment.

When the checkup engineer observes the complete installation of an account on a work order, he enters the date opposite the account number in the column headed "installed". By glancing down this column, he can determine the status of a work order, since open spaces indicate an active account.

Setting up the sheet

The preliminary Job Data Sheet is forwarded by the billing section of the engineering department soon after a job is opened. This preliminary sheet includes a list of equipment drawings that will be required, whether the drawing is to be made by the engineering department or forwarded by the manufacturer. This information should be transferred to the Job Data Sheet as soon as possible so that the checkup clerk will know what is needed in the line of equipment drawings.

Average building accounts require five to seven horizontal lines per entry, while some accounts, on structural steel for instance, may require up to 30 lines. Equipment accounts usually require about ten lines each.

Interpretation of Information

The Job Data Sheet is useful in two ways. First, it provides a record of details of a work order, and secondly, it provides a fast means of determining the status of a job. Any item can be

"Allows a man that extra edge to whittle a bid" says A. B. Simmons

Gentlemen:

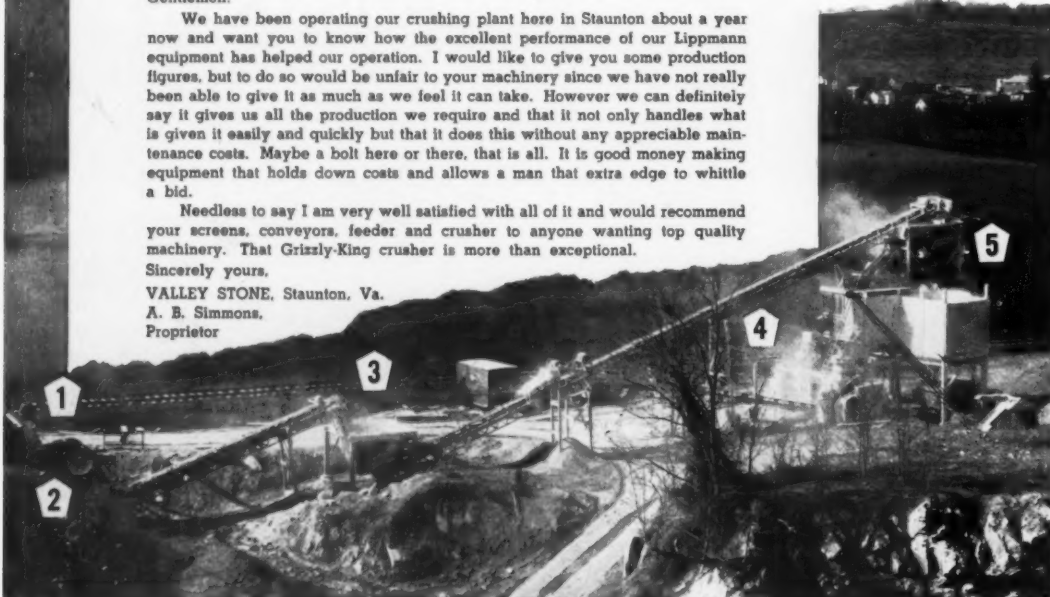
We have been operating our crushing plant here in Staunton about a year now and want you to know how the excellent performance of our Lippmann equipment has helped our operation. I would like to give you some production figures, but to do so would be unfair to your machinery since we have not really been able to give it as much as we feel it can take. However we can definitely say it gives us all the production we require and that it not only handles what is given it easily and quickly but that it does this without any appreciable maintenance costs. Maybe a bolt here or there, that is all. It is good money making equipment that holds down costs and allows a man that extra edge to whittle a bid.

Needless to say I am very well satisfied with all of it and would recommend your screens, conveyors, feeder and crusher to anyone wanting top quality machinery. That Grizzly-King crusher is more than exceptional.

Sincerely yours,

VALLEY STONE, Staunton, Va.

A. B. Simmons,
Proprietor



Lippmann Stationary Crushing Plants

It is when conditions become competitive that material producers appreciate their Lippmann Equipment most. That is when 34 years of Lippmann engineering experience, applied to the overall layout and make-up of their plants, really counts. That is when the special design and know-how built into Grizzly-King and Rock Ram Jaw Crushers, Ever-Seal Conveyors and Screen-All Vibrating Screens, proves its extra value — enables operators to keep ahead competitively — to keep delivering specification material on schedule and at a profit. Add to this Lippmann's practice of

pricing its equipment in competition with ordinary machines, plus backing its products to the limit, and it's no wonder the switch is to Lippmann.

If you want to know more about the reasons behind this swing — whether it involves crushers, feeders, screens or complete stationary and portable washing or crushing plants — then contact your local Lippmann Dealer, or Lippmann Engineering Works, Inc., direct at 4637 West Mitchell Street, Milwaukee 14, Wisconsin. Learn how Lippmann quality can go to work for you too.

1. Heavy Duty 3x10 Apron Feeder
2. Grizzly-King 24x36 Jaw Crusher
3. Lattice Frame Belt Conveyor — 24"x45'
4. Lattice Frame Belt Conveyor — 24"x135'
5. Triple Deck "Screen-All" 4"x12' Vibrating Screen



WRITE FOR NEW LITERATURE on famous Lippmann Portable Plants: "Mohawk" Primary (#1610); "Comanche" Dual (#1600).

1900-57-3

LIPPMANN
SINCE 1923

CRUSHERS FEEDERS SCREENS CONVEYORS CRUSHING & WASHING PLANTS

For more facts, use Request Card at page 18 and circle No. 214

Clark acquires 30 per cent interest in licensee

Clark Equipment Co., Buchanan, Mich., has acquired a 30 per cent equity interest in the West German manufacturing concern which has been producing Clark fork-lift trucks under license since 1952. The equity interest was obtained from Ruhr Intrans Hupstapler G.m.b.H., located at Mulheim-Ruhr on the industrial outskirts of Dusseldorf. The interest was acquired in exchange for 18,000 shares of Clark common stock.

Ruhr Intrans, Clark's largest overseas licensee, will continue to manufacture diesel and battery-powered fork-lift trucks and will also start producing the Michigan line of tractor shovels.

Bucyrus-Erie film features Hydrocrane

"Hydro-Magic" is the title of a 16 mm sound-color movie showing Bucyrus-Erie's Model H-5 Hydrocrane in action. Among the demonstrations are shots of the rig setting down one pound of a nine-ton load, placing heavy steel beams with accuracy, inching concrete slabs into place, handling 36-inch sewer pipe, and setting 110-foot utility poles.

A circulating print of "Hydro-Magic" is available from Bucyrus-Erie. For information on obtaining the film, write the company's Publicity Department, South Milwaukee, Wis.

Thor appoints two

William J. McGraw has been appointed manager of the electric tool sales division of Thor Power Tool Co., Chicago, Ill. He will direct the firm's sales of universal electric tools for industrial, construction, maintenance, and trade use, from offices in Chicago. John Trumble is the new factory manager of the Aurora, Ill., works of the company.

(Continued from preceding page)

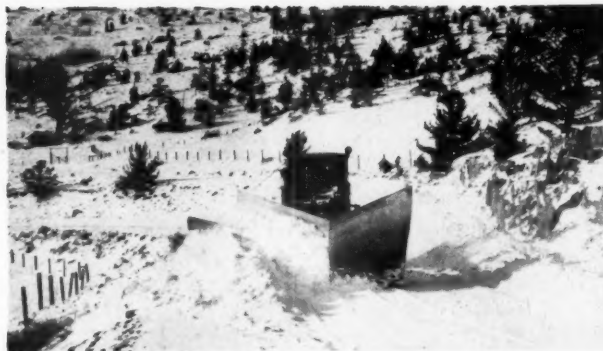
located easily if any one of the following is known: account number; item number; drawing number; BM number; requisition or purchase number.

The sheets can be thought of as block-type graphs. Information is posted from left to right across the sheet, and a work order with most of the material in the drawing or BM stage will be practically blank to the right of the BM column on the sheets. A work order that has most of the material ordered will be filled in more completely. With a little practice, anyone concerned with the job can tell at a glance the status of all material on a given work order. The Job Data Sheet is effective in job control, since it keeps the job time schedule before the checkup clerk at all times and makes it easy for him to compare the schedule and performance of both the office and the field.

(Next month's article will deal with "Planning & production—progress reports.")

OCTOBER, 1957

NOWHERE IS THE JOB of keeping roads open in winter more difficult than in the rugged country and wide open areas of the Northwest. Both a snow wing and a V-type snowplow are being used by the Cat No. 12 motor grader to get snow off Main Boulder Road, just south of Big Timber, Mont.



On Yazoo River Basin Project, Yazoo County, Miss.

PIONEER GETS HIGH PRODUCTION FROM CAT* LOWBOWL SCRAPERS



DW20-NO. 456 LOWBOWL SCRAPER is push-loaded by a giant D9 Tractor. LOWBOWL design loads more material with less resistance clear to the end of the loading cycle for quicker heaped loads.



DW21-NO. 470 LOWBOWL SCRAPER speeds heaped load on haul. Turbocharged 6-cylinder Cat Engine, also in the DW20, delivers 300 HP (maximum output)—power aplenty for working in tough conditions.

At the time these pictures were taken, Pioneer Contracting Co., Inc., Memphis, had completed 100 working days of a schedule calling for 600. The project, involving 2,045,000 cu. yd. of earthmoving on the Yazoo River Basin, covers some 7 miles of work on channels, levees, drainage ditches and road relocation. There's a fleet of Caterpillar-built units on the job, including two DW20-No. 456 LOWBOWL Scrapers, a DW21-No. 470 LOWBOWL Scraper and a giant D9. They work 24 hours a day, 5 days a week. Says Pioneer's Scraper Foreman R. C. Parker: "We prefer Caterpillar-built equipment because of ease of operation. You can also depend on them for a minimum of down time. And wherever we are, Caterpillar Dealer service is always available."

Reports from job after job show that, under identical job conditions, Cat LOWBOWL Scrapers get bigger loads faster than competitive units. Both the four-wheel DW20-No. 456 and the two-wheel DW21-

No. 470 have capacities of 18 cu. yd. struck and 25 cu. yd. heaped. Their LOWBOWL design loads more material with less resistance clear to the end of the loading cycle for quicker heaped loads. And the Turbocharged 6-cylinder Caterpillar Engine delivers 300 HP (maximum output) for fast loading, hauling against adverse grades and dumping in tough going.

Whether you're a two-wheel or a four-wheel man, you can count on profitable production from LOWBOWL Scrapers. Your Caterpillar Dealer will be glad to show you competitive production facts and figures from actual jobs. Better still, name the date—he'll demonstrate on your job.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**WANTED—
THE HARD WORK**

For more facts, use Request Card at page 18 and circle No. 215



Landing a big one in the Detroit River is easy these days, following blasts to deepen the Amherstburg Channel.

The lighter side

Contractors dredging the Amherstburg Channel in the Detroit River are inadvertently contributing to the dinner table of the crew of a tug which ferries men and supplies to drill barges. Whenever an underwater dynamite blast goes off, shattering the rock in the river bottom, fish in the vicinity are stunned by the charge and float to the surface. The alert tug captain grabs a net and snares a respectable mess of pickerel or perch. That's really combining pleasure with business. The net fisherman is complaining, though, that the fish seem

to be smartening up, and are now shying away from the channel-deepening project.

• • •

The largest single construction contract ever awarded for private work in Cuba has just been given to the Frederick Snare Overseas Corp., a subsidiary of Frederick Snare Corp. of New York City, which has been doing work in Cuba since 1902. The job is to perform all field work in Cuba for Freeport Sulphur Company's \$119,000,000 nickel-cobalt project, including plant and facilities for mining and concentrating the ores. Between 2,000 and 3,000 Cubans will be employed during the construction, and more than 1,000 will be required to operate the facility.

• • •

New tunnels are being projected all over the globe. In January, Venezuela will start construction on a 3½-mile-long tunnel that will pierce the 7,000-foot-high Avila mountain range, the natural barrier between Caracas and the Caribbean coast. The vehicular tunnel, sponsored by the Ministry of Public Works, will have two roadways each with two lanes. Ventilation will be assured mechanically by 48 fans for injecting fresh air, and 48 fans for pumping out the used air. The tunnel will be built on a 2.5 per cent grade.

On the other side of the globe, the Japanese have only about six more months of work before completing a two-mile-long vehicular tunnel. The double-deck tube, second longest in the world, goes under the sea to connect Kyushu, Japan's southernmost island, with the mainland. (The world's longest tunnel extends for 2½ miles under the Mersey River in Great Britain.) The Japanese started their tunnel back in 1939, but the project was discontinued during World War II.

Meanwhile, a study is under way to analyze the feasibility of a tunnel under the English Channel at the Strait of Dover linking England and France. An international syndicate made up of French, British, and United States interests is making this preliminary survey, which is expected to take about 1½ years. The 36-mile tunnel, according to an early estimate, would cost close to \$300 million and take about ten years to construct.

• • •

Red mud from the Caribbean island of Jamaica may be a highway material of the future. The mud is a by-product in the production of alumina, according to the Reynolds Metal Co.; alumina is extracted from bauxite shipped from the West Indian island. The aluminum company feels that the red mud could become a substitute for limestone in preparation of asphalt mixtures for highway surfacing. Mixing the by-product with asphalt would produce a road surface with a reddish tint. The colored surface could be used to indicate specific highway lanes or routes.

"FLYGT PUMPS SAVED US OVER \$55,000.00 ON THE LONG BEACH AIRPORT JOB,"

reports O. K. KRINGLEN, Job Superintendent

J. S. BOESPFLUG, CONTRACTORS

Seattle, Anchorage, Billings, Los Angeles

In the extension of runways for the Long Beach Municipal Airport, contractors must build two traffic underpasses for Lakewood Blvd. and Spring Street—major arteries in the City's roadway system. With funds from a municipal bond issue, the runways will be extended to 10,000 feet, over the two roads, so as to accommodate the largest jet transports now on aircraft manufacturers' drawing boards. The job totals \$5½ million, of which \$3,485,000 is allocated to construction of the two underpasses.

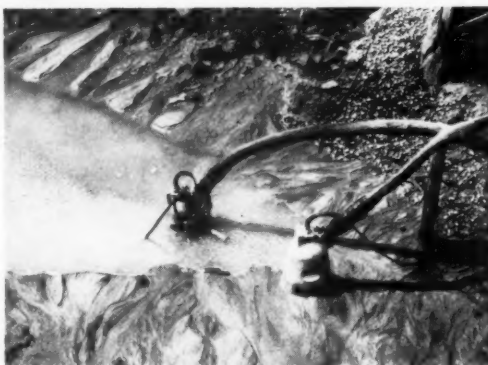
While under construction, the Spring Street underpass presented some interesting and difficult de-watering problems. The structure is designed to be 1083' long, 64'4" wide, and 31' high. Excavating for the 31' height revealed a "joker." After the tractor-scraper dirt moving had been completed, J. S. Boespflug, prime contractors on the job, moved in a crane to excavate foundation areas for the structure. This work required earth removal 12 feet below the 22-foot ground water level. Water intrusion was immediate.

The contractor's first impulse was to install a well-point system for de-watering. Investigation revealed that such a system would have cost approximately \$60,000. Then the Boespflug company observed a demonstration of Flygt submersible Electric Pumps. A short time later, 3 Flygt Model B80L Pumps were put on the job. Total investment in the Flygt Pumps: only \$3,000.

O. K. Kringlen, job superintendent, tells the story from that point in his own words: "We needed submersible pumps, each with a minimum 6000 gallon per hour capacity, that would reach a 35' head and move water at least 30' horizontally. Since the pumps would be working in both sand and clay, we had to have centrifugals which would move up to 30% solids. Flygt met all those specifications, so we purchased three 3" model B80L's. So far we've only needed two of the three to do the job, so one is a standby. The nice thing about the electrically powered Flygts is that they can be put to work and ignored. They run 24 hours a day on this job, and the only time we touch them is to lift and lower them with the water level, with a rope suspension. The two Flygts easily managed to keep ahead of our water intrusion. We figure Flygt Pumps saved us over \$55,000 on this one job, so we adopted the Flygt Pumping Method."

Pump operators find Flygt Pumps tops in performance. Users particularly like their fool proof features, the advantage that they work in any position, and the fact that they do not clog up. They can take a lot of solid stuff like mud and sand without hurting them in any way. The rubberized pump casing and hard chrome alloy impellers combine to make Flygt Pumps rugged equipment.

Flygt centrifugal pumps are manufactured in Sweden and range in size from 1½"—65 GPM capacity to 8"—2850 GPM capacity. Head capacities range up to 210 feet. Weights range from 70 to 1300 pounds. Ask for complete information today.



CHECK THESE FLYGT FEATURES

- ✓ Electric
- ✓ Heavy Duty
- ✓ Submersible
- ✓ Continuous Duty
- ✓ Will pump up to 30% solids
- ✓ Resistant to salt water
- ✓ No priming needed
- ✓ Easy to handle
- ✓ No installation costs
- ✓ Low maintenance costs
- ✓ Quick and easy to service
- ✓ Run dry without damage



CALL OR WRITE YOUR NEAREST FLYGT PUMP DEALER

CONSTRUCTION MACHINERY CO., San Diego, Calif.; CROOK COMPANY, Los Angeles & Bakersfield, Calif.; WIN-WARD CO., Pomona, Calif.; C. H. BULL, San Francisco, Calif.; WEST COAST ENGINE & EQUIPMENT CO., Berkeley, Calif.; CALORE MACHINERY EQUIPMENT CO., INC., Medford, Oregon; CRAMER MACHINERY COMPANY, Eugene & Portland, Oregon; THE CARRINGTON COMPANY, Seattle, Washington; TURNER SALES COMPANY, Spokane, Washington; ENGINEERING SALES AND SERVICE, INC., Boise & Idaho Falls, Idaho; WASATCH EQUIPMENT COMPANY, Salt Lake City, Utah; SHRIVER MACHINERY CO., Phoenix, Arizona; RENO EQUIPMENT SALES COMPANY, Reno, Nevada; CUMMINS RIO GRANDE SALES & SERVICE, Albuquerque, New Mexico; CONSTRUCTORS EQUIPMENT CO., INC., Denver, Colorado; HALL-PERRY MACHINERY CO., Billings, Butte, Great Falls & Missoula, Montana.



For more facts, use Request Card at page 18 and circle No. 216

An
air tool
on
free loan
if your
Blue Brute
needs
repair!

BLUE BRUTE DISTRIBUTORS ANNOUNCE NEW GUARANTEED AVAILABILITY PLAN

The most important thing about an air tool is to keep it out on the job working.

That's why Worthington Blue Brute tools are built for ruggedness—for ability to stand up under day-in, day-out punishment.

Another progressive step in keeping Blue Brute air tools on the job has just been announced. Under the terms of a new Availability Plan, we will lend you an air tool free if any of your hand-held Blue Brute tools in our shop for repair.

Greater tool stocks, parts inventories

Be sure the tool you need is there when you need it. We have recently enlarged our stock of standard tools and accessories. We also carry a large inventory of parts so that repairs or replacements can be made quickly and inexpensively.

For greater profits keep your air tools on the job by (1) buying Blue Brute tools and (2) taking advantage of the Guaranteed Availability Plan. For complete details on the new plan, ask your nearby Blue Brute distributor for Bulletin G-2500.

H.7.6

WORTHINGTON



For more facts, use Request Card at page 18 and circle No. 217

For details about the new Availability Plan
see a participating Blue Brute distributor

- ALABAMA**
Ben Williams Equipment Company—Andalusia
H. S. Salmon & Company—Birmingham
- CALIFORNIA**
West Coast Engine & Equipment Co.—Berkeley,
LeRoi-Rix Machinery Company—Los Angeles
L. E. McDowell Co.—Richmond
H. P. Kingsley Company—San Bernardino
Vern & Flynn's Rental Service—San Carlos
Kenton Equipment Company—San Diego
- COLORADO**
Power Equipment Company—Denver
- CONNECTICUT**
Construction Equipment Company—Wilson
- FLORIDA**
Julien P. Benjamin Equipment Co.—Jacksonville
A. W. Thomas Construction Machinery—N. Miami
Highway Equipment & Supply Co.—Orlando
- GEORGIA**
Tractor & Machinery Company—Atlanta
- ILLINOIS**
Riverside Sales Contractors Equip.—Brookfield
Capital Tractor & Equip. Co.—Morton, Springfield
- INDIANA**
Reid-Holcomb Co.—Indianapolis, Evansville,
South Bend
- KANSAS**
Southwest Equipment Company—Dodge City
- MAINE**
N. A. Burkitt, Inc.—South Portland
- MARYLAND**
Elphinstone, Inc.—Baltimore
Free State Equipment Co.—Baltimore
Washington, D. C.
- MASSACHUSETTS**
Morrissey Brothers Tractor Company—Burlington,
Northampton, Woburn
- MICHIGAN**
Great Lakes Equipment Company—Muskegon
- MINNESOTA**
Minneapolis Equipment Company—Minneapolis
- MONTANA**
Caird Engineering Works—Helena
- NEW HAMPSHIRE**
New Hampshire Explosives & Machinery Co.—
Concord
- NEW JERSEY**
Miller Equipment Company—Dunellen
American Air Compressor Corp.—North Bergen
- NEW YORK**
Murray Construction Equipment Co.—Buffalo
Heil Equipment Company—Long Island City
- NORTH CAROLINA**
Spartan Equipment Company—Charlotte
- OHIO**
Brinker Supply Co.—Cleveland, Columbus, Dover
Beasley-Holmes Company—Toledo
- OKLAHOMA**
Herd Equipment Company—Oklahoma City
- OREGON**
Western Equipment Company—Eugene, Portland
- PENNSYLVANIA**
American Equipment Co.—Mechanicsburg
Metalweld, Inc.—Philadelphia
- RHODE ISLAND**
BMG Equipment Company—Providence
- SOUTH CAROLINA**
Gaines W. Harrison & Sons—Columbia
- SOUTH DAKOTA**
Sioux Road, Inc.—Rapid City, Sioux Falls
- TENNESSEE**
Carrey Equipment Company—Memphis
- TEXAS**
Abilene Equipment Company—Abilene
Tom W. Carpenter Equipment Co.—Amarillo
G. A. Coffey Company, Inc.—Dallas
Pearce Equip., Co., Inc.—Houston, San Antonio
- VIRGINIA**
Cary Hall Machinery Company—Salem
Industrial Service Company, Inc.—Norfolk
Knight Equipment, Inc.—Richmond, Arlington
- WASHINGTON**
Star Machinery Company—Seattle, Spokane
- WEST VIRGINIA**
Equipment Distributors, Inc.—Charleston
- WISCONSIN**
Hunter Tractor & Machinery Co.—Milwaukee,
Green Bay
- WYOMING**
Kereml Tractor & Equip. Co.—Cheyenne, Casper
- CANADA**
Precision Machine & Foundry—Calgary, Alberta
West Coast Equipment, Ltd.—Vancouver, B. C.
Hub Equipment, Ltd.—Brockville, Cornwall and
Toronto, Ont.
Modern Machinery, Ltd.—Quebec City and
Montreal, Quebec

Labor review

The Teamsters got a second bill of particulars from the AFL-CIO Ethical Practices Committee, detailing charges against the heir-apparent to the Teamsters' presidency, James R. Hoffa.

While the Committee, headed by A. J. Hayes of the International Association of Machinists, did not release the list, best guesses were that the charges follow the 48-counts put into the record against Hoffa by Sen. McClellan (D.—Ark.) head of the Senate Labor Investigating Committee. McClellan outlined the Committee's charges against the Teamster vice president after Hoffa answered many of the Committee's questions with "I don't remember."

In its 48 charges against Hoffa, the Committee included seven conflicts of interest in loans, five questionable uses of union funds, 11 conflicts of interest in business transactions, three conflicts of interest in stock purchases, 13 charges centering around Hoffa's "close associates", one charge of questionable expenses, and one charge that Hoffa masterminded the setting up of paper locals in New York City.

Agreement on a two-year, 65-cent package sent some 1,100 sheet metal workers back to their jobs in Pittsburgh, Pa., ending a strike which began on July 1. The men had been out for about six weeks.

The full 65 cents applies to wages. A 30-cent increase in rates went into effect immediately, with 10 cents more due next January 1, and a final 25 cents to be added on July 1, 1958. Welfare fund contributions of 7½ cents an hour and pension payments of 10 cents an hour were carried over from the union's previous contract.

The pre-strike hourly rate was \$3.42½. The new contract raised the scale to \$3.72½ now, and it becomes \$3.82½ on January 1 and \$3.97½ next July. The agreement was signed by Sheet Metal Workers Local 12 and the Sheet Metal, Roofers and Air Conditioning Contractors Association of Pittsburgh.

Outlays for new construction during July rose 1 per cent over the June total but the increase was less than that which usually takes place between the two months.

For July, total outlays came to \$4,403 million, representing a gain of 1 per cent from the prior month but a loss of 2 per cent when compared with the spending for July, 1956.

Seasonally adjusted, outlays in July were at annual rate of \$46,380 million, down a bit from the all-time record rate of \$47,160 million set during June. Most of the drop from the rate of the prior month took place in the public sector where cement shortages in the Eastern and Gulf Coast areas,

stemming from a strike, particularly affected work on highways.

For the first seven months, expenditures for new work were 2 per cent ahead of last year's pace for the same January-July period. Private construction so far this year is lagging 1 per cent behind year-ago levels, mainly because of weakness in new home construction, but spending for public projects is a healthy 9 per cent ahead of a year earlier.

In the private sector, expenditures for new housing picked up somewhat in July. At \$1,556 million, outlays were 2 per cent above the level for June and only 7 per cent under the total for a year ago. This is one of the smallest year-to-year losses for private residential work in some months.

And, on a seasonally adjusted basis,

outlays for housing for the first time this year showed a gain over the prior month. This increase reflected the spring rise in housing starts in May and their stabilization in June and July at a seasonally adjusted annual rate of about 980,000 units.

During July, the dollar value of work on office buildings fell off, after seasonal adjustments, for the first time since February. The cement shortage had some effect. Work on public utilities showed about the usual seasonal rise in July and was not slowed down much by the cement supply situation.

For public projects, spending in July actually rose for highways but the cement shortage held down the rise to a less-than-seasonal amount. The \$545 million in highway outlays

was an all-time peak for July.

At the same time, spending for sewer and water projects failed to show the usual June-to-July increases. However, work on military and conservation projects increased along the seasonal pattern.

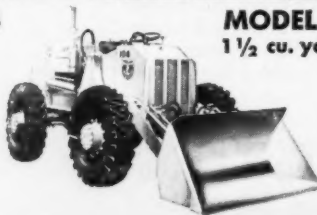
District No. 2 of the Boilermakers in New York City—without a strike—reached a three-year agreement with local contractors which was a slight improvement on the three-year agreements concluded by Iron Workers and Sheet Metal Workers after a strike.

The agreement provides total increases of 75 cents during its term—the same amount as the Sheet Metal Workers and more than the Iron Workers negotiated. Distribution of the increase is slightly more favorable

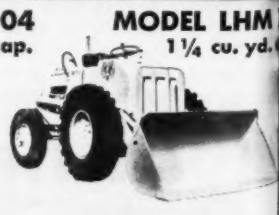
HOW TROJAN FROM A YALE



MODEL 154
2 cu. yd. cap.



MODEL 104
1½ cu. yd. cap.



MODEL LHM
1¼ cu. yd.

than that of the sheet metal increase, where two 15-cent increases are left to the last contract year. The Boilermakers get a 15-cent increase on July 1 of each year, and another 10-cent increase on January 1 of each year.

In addition, the agreement provides a 10-cent pension payment, retroactive to July 1, 1957. The previous fringe benefits of 5 per cent health and welfare payment and six paid holidays are continued.

The prior rate of \$4 an hour for the 500 or so boilermakers covered will be up to \$4.75 by the time the contract expires on June 30, 1960.

Officials of the International Union of Operating Engineers played "musical chairs" in an election held during a special meeting of the union's

General Executive Board to fill the post of International Secretary-Treasurer, vacated by the death of Charles Gramling.

Joseph J. Delaney, the union's fourth vice-president, got the job.

The vacancy thus created among the vice-presidents was filled by election of Newell Carman, who became the tenth vice-president. Carman moved up from his post as union trustee, and that job was filled by Leo Bachinski, who is a new face among the International's officialdom.

Delaney has been a vice-president of the New York State Federation of Labor since 1939, and an official of the union's Local 15 for 37 years. Carman, besides his trustee post, has been a union regional director in seven Far West states since 1951, and

an official of San Francisco Local 64 since 1946. Bachinski has been an official of Local 148 in University City, Mo., since 1942.

In a speech to the Senate Sen. Mundt (R.—S. Dak.) declared that disclosures of the McClellan rackets investigating committee indicate the need for Congress to enact new labor legislation in 1958 because the Taft Act, adopted 10 years ago, is "inadequate and insufficient" to solve some labor problems.

Mundt's prepared speech highlighted some of the areas where legislation is indicated, but his general underlying idea was that Congress must legislate a second bill of rights to guarantee the dues-paying union member a freedom of choice and de-

termination in the conduct of his union and its affairs.

The South Dakota Senator, a member of the McClellan committee, spoke about free unionism's having become forced unionism "with a centralization of power in an oligarchy of union leaders who refuse to accept responsibilities equivalent to their authority". He said this is something that requires attention of the government in both the legislative and executive branches.

Mundt listed five areas where he said Congress might legislate in the light of the record accumulated by the McClellan committee hearings, although pointing out that it is too early to predict the precise nature of the legislation needed:

1. To protect union treasuries into which members pay dues. Union officials should be required to assume "a well-regulated and protected trusteeship" over all such funds.

2. To strengthen democratic procedures and processes in labor unions desiring to use the facilities of the National Labor Relations Board. His idea is to restore self-government to the membership where it is lacking and has been supplanted by dictatorship from the top.

3. To protect union members and citizens from infiltration of unions by criminal elements. Persons deprived of voting rights after conviction for crime would be made ineligible by law to hold positions in unions doing business with the National Labor Relations Board.

4. To protect individual workers against political assessments by union leaders for federal elections.

5. To correct the inadequacies of the Taft Act in dealing with secondary boycotts.

Mundt does not directly advocate repeal of the union-shop authority in the Taft Act, but he does note that federal legislation legalizes compulsory membership and dues check-off. And with union leaders thus freed from the job of selling unionism and serving the interests of the members, Mundt says, they can concentrate on perpetuating themselves in office and serving their own interests.

The second area-wide agreement covering about 8,000 plumbers in the New York City area was signed by the Plumbing Contractors Association of the City of New York, Long Island, and Westchester County, and Plumbers' Local Unions 1, 2, 371, 457, and 775.

The new three-year agreement, replacing the first area pact signed in 1956, provides for a 15-cent wage increase retroactive to July 1 and additional increases of 10 cents on January 2, 1958; 15 cents on July 1, 1958; and 20 cents on July 2, 1959. The present wage rate, including the first increase, is \$4 an hour.

Fringe payments, now 12 per cent, will be increased by one per cent on July 1, 1958, and by another one per cent on July 2, 1959.

The New York area plumbers have been working without a contract since June 30, but agreed to continue on the job during negotiations.

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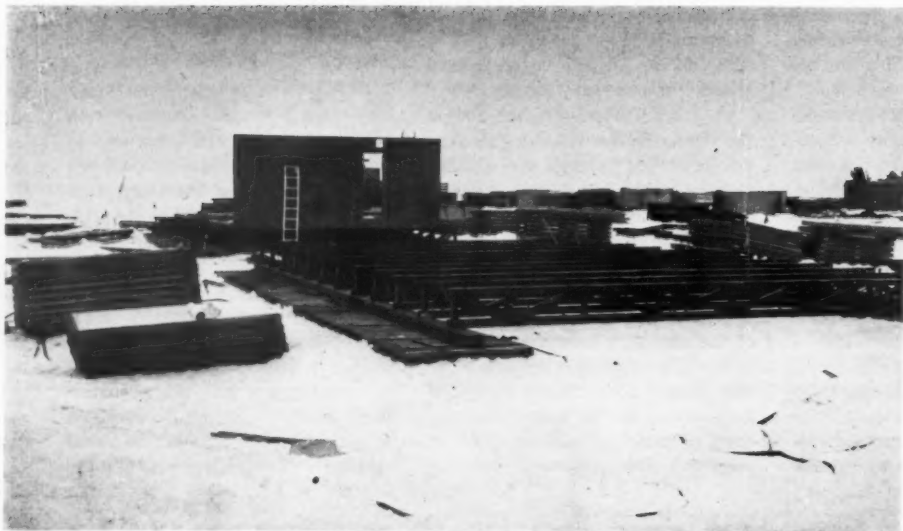
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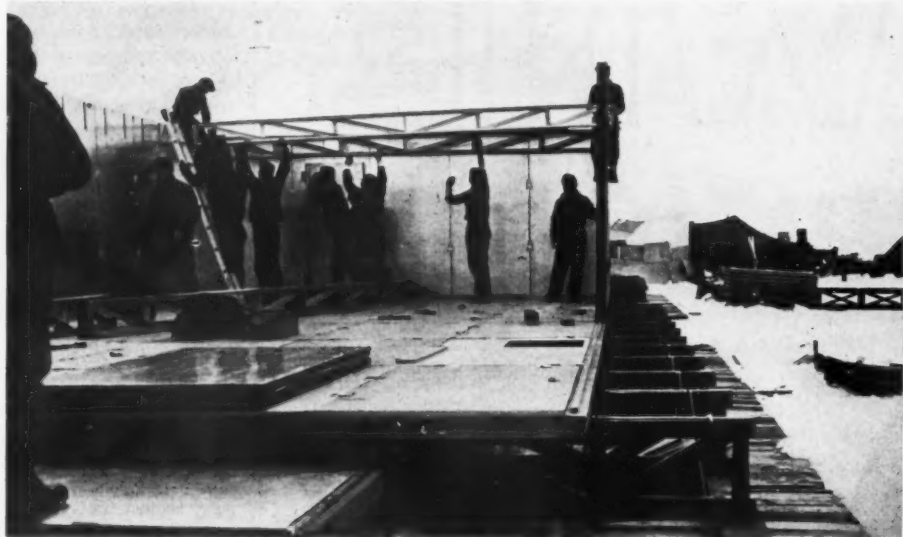
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Standardization on 4x8-foot insulated panels for flooring, walls, and roof, simplifies construction of the U. S. bases here at Little America Five.



Panels are joined by clips as roof joists are being placed. Panels are lined inside with an aluminum vapor barrier; Fiberglas is stuffed between the inside panel and the plywood outside.



Roof panels, which do not require fasteners for installation, are light enough to be handled by two men. Buildings withstand 100 mph wind.



A Navy helicopter hovers over the tractor train putting out from Little America Five with equipment for Byrd Station, more than 600 miles away. The Cat D8 pulls a "wanigan", a house of standard building panels on a 12x24-foot sled, which serves as sleeping quarters on the trail.

When science called, the U. S. Navy built

seven bases at the end of the earth

by JOSEPH E. OGLESBY

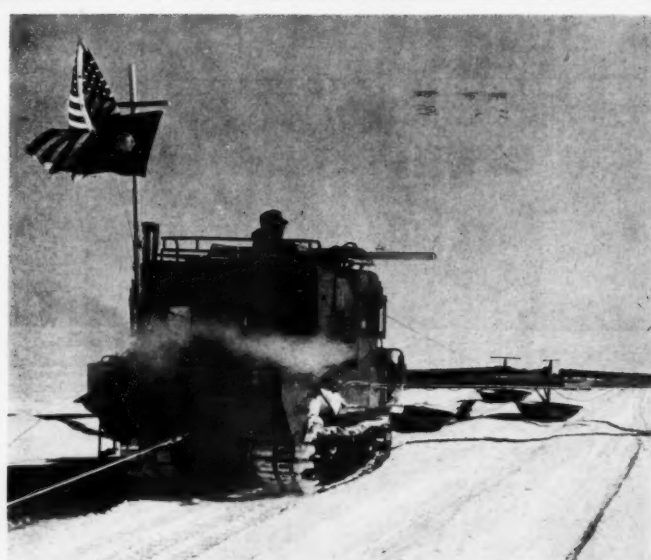
Until the day someone demands a base on the crust of the moon, Operation Deep Freeze will stand as a construction job unequalled in history.

In two Antarctic summers, 5,000 men built seven bases in a 4,000,000-square-mile area at the bottom of the earth. These were ready July 1, with the start of the International Geophysical Year, for the 70 American scientists participating in the most extensive study ever made of the earth. Scientists of 56 nations, at 44 bases manned in the Antarctic by a dozen nations, will be making observations of the earth and the sun during the 18-month study.

(Continued on next page)

Winter work

Official U. S. Navy photographs



A "weasel" precedes the advance trail party across Ross Ice barrier, using a crevasse detector to search out hidden chasms in the ice.



The foundation for one of the huts at Little America Five is tamped level by men during early stages of work.

(Continued from preceding page)

Of the seven U. S. bases, three are on land and four on ice. Among the first to be built were Little America Five on the Ross Ice Shelf at Kainan Bay, and the Naval Air Facility on Ross Island at McMurdo Sound. These were erected by a seven-ship task force of 1,805 men during Operation Deep Freeze I in 1955 and 1956. During this operation, materials were cached at Little America for delivery to Byrd Station and at McMurdo Sound for South Pole Station.

A second force of 12 ships and 3,525 men returned in 1956-57 to de-

liver cargo for Wilkes Station on Clark Island near the Knox Coast, Ellsworth Station on the Weddell Sea, Adare Station at Cape Hallett; and to supply more cargo for completed bases.

Though task force men faced innumerable discomforts, and some lost their lives when planes crashed and tractors plunged into crevasses, all bases were manned and ready for operation in March, when the last ships and planes left 318 men behind for the winter night.

Job on drawing boards

The work had been difficult, but it had been made easier by the fact that the entire job was completed on the drawing boards by the U. S. Navy Bureau of Yards and Docks in Washington, D. C., before the first ship sailed in Operation Deep Freeze I.

The Navy drew on every available source of knowledge, including reports of past American and foreign expeditions to Antarctica, and almost every bureau of the federal government was consulted for details. The problems to be overcome were enormous.

Bases had to be built in a land where nights last four to six months, where temperatures are 80 degrees below zero or colder. The mean temperature at Little America is minus 50 degrees, and planners presumed that at South Pole Station, 600 miles farther south, temperatures would drop even more. All materials, machinery, and supplies needed by construction crews had to be brought by ship or plane to the site. There was no possibility of foraging off the land.

Buildings developed

Construction of buildings in this polar region posed unique problems. They had to stand up against winds of 100 mph, snow loads of 125 pounds per square foot, and temperature

Time out for "mugging" after a 15-inch snowfall, at one of the bases, while building construction continues in the background.



CONTRACTORS AND ENGINEERS

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THE OWNER WHO
THOUGHT AHEAD**

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differentials up to 190 degrees F. Many camps had to be built on vast plains of snow, and these would be covered with snow within a year. This meant that connecting tunnels, escape hatches, and access ramps had to be included in the design of the buildings.

Undersnow storage caches had to be provided at the camps, since supply ships are able to reach the continent only during three months of the year, and air and overland transport in the Antarctic is extremely hazardous.

Taking all this into account, the Bureau of Yards and Docks settled on a building consisting of 4x8-foot panels for flooring, walls, and roofing, lined on the inside with an aluminum vapor barrier and joined by metal clips. A void stuffed with Fiberglas provides insulation between the inside aluminum panel and the outside plywood. Wedge clips are used to join all panels. When driven tight, they compress a loose spline against tube-type rubber gaskets that are set in grooves on the panel edges. These buildings were so designed that they could be erected in various lengths by the addition of 8-foot increments. Widths of the buildings are 8 and 20 feet. The standard Antarctic building is 20x48 feet.

Roof panels are supported by high-tensile steel or aluminum roof joists fitted into T-type slots spaced on 2-foot centers in the wall panels. The roof joists were light enough for two men to handle, and they do not require tools or fasteners for installation.

At bases built on land, the floor panels rest on wooden sills. Buildings constructed on ice are set on high-tensile steel or aluminum saddle trusses. This saddle-type truss foundation, which transmits the weight of the building outside the floor, was developed by the Bureau to overcome still another problem: the warping of

the buildings when the thermal regime of snow is disturbed by the flow of heat through the floor. The high-tensile steel or aluminum trusses—steel being used if magnetism was not a factor, aluminum if the building had to be magnetic-free—span the width of the building and rest on timber pads parallel with but outside the building area. These pads are placed so that maximum ground pressure does not exceed 4 psi.

Interior construction

Interior partitions consist of 3/8-inch plywood panels that slide into precut H-type sill, head, and jamb sections. Combinations of these panels made it possible for rooms of any size to be built. Partitions on the corridors were provided with pre-drilled holes to aid air circulation in buildings with space heaters.

The planners ordered radiant-type oil-burning space heaters for unpartitioned science buildings that were to be erected on land, and space heaters to be used in case a power failure knocked out the forced air system. Forced hot-air jet heaters were specified for use in partitioned barracks buildings, with space heaters as a reserve source of heating.

Air exhaust

Recalling the late Rear Adm. Richard E. Byrd's narrow escape from death by carbon monoxide poisoning in 1933, when he spent an Antarctic winter night alone on the Ross Ice Shelf, engineers took steps to make sure that every building would have positive control of air intake and exhaust, and that smoke and exhaust stacks were placed so that discharged gases could not be drawn back into the buildings. They placed exhaust fans in the vestibules leading to the tunnels, and thus tempered the air in the tunnels as well as created a warm air flow that could be used to dry



Lumber jammed under treads of a D4 tractor-dozing gives the rig enough traction to climb the steep grade to the Wilkes Station site. Material delivery waited until underwater demolition teams had cleared a channel for the amphibious boats.

men's clothes and heat the tunnels, which lead to other buildings.

Special problems

Not all of the problems solved by the engineers planning the bases for Operation Deep Freeze were physical. To make sure that men wintering in the undersnow buildings wouldn't get claustrophobia, the engineers called on the Libby-Owens-Ford Corp. for skylights, each the size of a building panel, made of a triple layer of glass with air pockets between the panes. Like the standard building panels, these skylights had to be strong enough to support the weight of a 200-pound man, and to withstand the temperature differential of 190 degrees. One airplane crew chief, whose side line is raising vegetables, was so impressed with the skylight in Little America's mess hall that he designed Antarctica's only picture window for the side of his barracks at Kiel Field, so that his plants could get maximum benefit from the sun before it dipped below the horizon on April 21.

For access tunnels, Yards and Docks engineers designed primitive-looking but effective arches of chicken wire covered with burlap and supported by wooden beams. When wet and allowed to freeze, the burlap made an airtight wall against the snows.

Engineers also developed a pack-

age-type snow melter, using exhaust and radiator heat from diesel generator sets, to supply water for the men at the bases. A typical completed installation has water pumped to an overhead tank to be fed by gravity to wash basins, showers, and automatic washing machines in a combination latrine-shower-laundry building. Waste water is drained into a tank and heated for disposal into the 2x10-foot latrine pit. The hot water makes the pit deeper but does not increase its width. Galley water is melted by a coil arrangement inside the range. Water for a large photo laboratory is pumped through an insulated pipe. Regardless of temperatures, darkness, or howling winds, men still have to shovel snow from sleds through hatches in the building roofs to feed the melters.

Since tractors at Little America had to be ready to start a long trek into Marie Byrd Land when sunlight returned after Operation Deep Freeze I, and those at McMurdo had to start dozing snow from the sea ice airstrip so that planes could land during Operation Deep Freeze II, engineers designed garages where mechanics could repair the huge tractor engines while temperatures in August dropped to the minus 70's.

A 4x12-foot wall panel was designed for these buildings, and additional (Continued on next page)

Bounded by sky and snow, Little America Five assumes an air of permanency three months after completion. This was one of the bases.



At the end of a year, the base is snowed under and Seabee Chuck Wedemeyer works on the roof of one of the Antarctic buildings as he shovels snow from a sled to a snow melter that supplies the camp with water.



(Continued from preceding page)

tional foundation sills with a 2-inch hardwood plank over the floor panels provided a floor of the required strength. During actual construction, and when materials were becoming short in supply, Seabees used a metal balk-bridge, which was designed to span crevasses, as flooring for a new garage at Little America.

Tower construction

The most difficult design problems were presented by the buildings to be used by the scientists. Among these were 8x20-foot heated buildings for the Aurora and Airglow towers, which had to be elevated 11 feet above snow level, and 20x24-foot elevated plat-

forms to support the heated 15-foot-diameter, dome-type shelters of Fiber-glas for Rawin observations.

Knowing that snow would reach the top of all buildings at the end of the first season and pile up at a rate of about a foot a year, engineers developed a tower that would be 11 feet above the roof line of adjoining buildings. Provision was made for jacking the tower up six 12-inch increments so that a clear height of 11 feet above sea level could be maintained for six years. In addition, the foundations were designed to present the least resistance to drifting snow. A light, prefabricated aluminum tower was developed, with telescoping aluminum

pipe columns to provide a means of raising the tower and decreasing wind resistance.

These towers were designed to be assembled without the use of power equipment by a minimum number of men, who would have to work under conditions of severe cold and at an elevation of 9200 feet at the Pole Station and 5150 feet at Byrd Station.

Perhaps the most unusual demand made on the engineers was for houses that could be used by crew members when tractor trains were under way. They solved this by designing a "wanigan", which consists of standard building panels assembled on 12x24-foot sled platforms. A messing "wanigan" was designed with table space for ten, a full-size galley range, a snow melter for water, sink space, and trail radio equipment. The sleeping "wanigan" was designed with ten bunks, hot and cold water, and circulating heat. All appliances feed off the generator running the snow melter. Both "wanigans" were to be towed in tandem by the same tractor, as Byrd Station was dragged from Little America to 80 degrees South, 120 degrees West.

Start of operation

All preparations completed for Operation Deep Freeze, the next big step was to get the 140 buildings, two

"wanigans", men, and equipment to the Antarctic.

Ships broke through the ice pack that guards the Ross Sea in December, 1955. One group went to Kainan Bay, the other steamed for McMurdo Sound.

At Kainan Bay, ships found a good unloading site on the sea ice, with a natural ramp leading upward to the barrier. Temporary tents were erected, and enough food stockpiled before permanent buildings were erected so that Seabees would be able to sustain themselves in case a sudden storm chased the ships to sea.

As cargo was dragged up onto the 800-foot-thick ice shelf, it was converted into houses. The snow crust was fairly hard, and the men merely had to level the snow to plant studs for the buildings. The big problem here was caused by the big ruts made by heavy Caterpillar 38-ton tractors. The entire camp area had to be scraped to the level of the deepest rut to get all the foundations even. As construction reached its peak, storms began to destroy the bay ice being used as a temporary cargo dump, and the men abandoned their working tools in an effort to get all the cargo onto the barrier before the sea ice broke up. By early February, all cargo was ashore and building shells completed. Cargo for Byrd Station was also un-

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CONTRACTORS AND ENGINEERS

loaded with Little America's supplies, and one of the hardest jobs at Little America in the following months was that of searching out parts and supplies for Byrd Station after they had been covered by 16 feet of snow.

At McMurdo Sound, the operation was more difficult. Ships were unloaded 58 miles from the base site and tractors had to tow the loads over the bay ice. Two wind-class icebreakers, the Edisto and Eastwind, made little headway against the pack ice until the icebreaker Glacier arrived from Little America.

The Seabees' job at McMurdo was to put up a 34-house city on the lava ash of Hut Point, but construction lagged because the task force commander was reluctant to let icebreakers work too close to the base lest they break up the landing strip used by planes making exploration flights. When the planes were evacuated in January, a channel was cut to within a few miles of the base site, speeding cargo for the air station and for later work on the South Pole base.

All buildings were erected according to plan at McMurdo, but radio antenna poles gave some trouble. Builders struck permafrost 6 inches below the surface. Shaped charges were almost useless, shattering outward rather than downward, and bigger and deeper holes had to be blasted until a 6-foot depth was reached and the antenna poles could be planted. Holes were filled with soil and water that soon froze as solid as concrete.

Second phase

Problems encountered in Deep Freeze I were relayed to the Bureau of Yards and Docks, which kept working until supplies were ordered, crews trained, and ships loaded for Operation Deep Freeze II.

Planes arrived at McMurdo Sound in October, 1956, and a group of trail experts flew on to Little America by ski-plane to begin blazing a safe trail to Byrd Station for the tractor trains. A test landing, made at the South Pole on October 31, marked the first time a plane landed there and the first time Americans had ever occupied the pole.

A temperature of minus 58 degrees in the rarefied atmosphere at the pole's 9200-foot elevation caused the postponement of construction until temperatures rose in mid-November. Then, 23 Seabees landed at the pole and began retrieving cargo dropped by parachute from Air Force Globemaster planes. Weather holding, planes flew about three missions per day. Seabees, toughened by conditioning exercises, kept working through December, when the bay ice landing strip at McMurdo Sound began to disintegrate and operations were suspended until February. Then the carriers resumed their drops and the wintering party of 18 men completed the base by March 21.

The first tractor train reached Byrd Station two days before Christmas, after driving continuously in two shifts on the 647-mile ice trail. Nine hours after the train arrived, the first building had been erected, complete with snow melter, stove, and water.

Four complete buildings were delivered by the first train, which also carried a heavy load of fuel. Planes flew fuel to the trail for the second train, allowing seven tractors to take heavier payloads of cargo on their 14 sleds. Construction at Byrd Station followed the pattern set at Little America.

A two-ship task group attacked the ice pack guarding the Weddell Sea in December, 1956, to construct Ellsworth Station. They spent 39 days in the ice pack before reaching the base site on the Filchner ice shelf. Once there, Seabees got help from shipboard sailors and had their base completed in 14 days, permitting the ships to retreat to safety before they could be frozen in for the winter.

Ships penetrated the Ross Sea ice pack December 18 with additional

cargo for Little America and McMurdo Sound, and with cargo for Adare Station at Cape Hallett and Wilkes Station on the Knox Coast.

At the Adare site, the Seabees first had to evacuate 150,000 Adelie penguins from the base before they could build foundations for the science buildings. Penguins were herded to a selected area, and a wire barricade was erected to keep them there during the time the base was to be used. The next job was to bulldoze the penguin guano that had built up over the years to reach hard surface for the buildings.

The icebreaker Glacier led two cargo ships to Clark Island on the Knox Coast, and protected them from drifting ice while an underwater demolition crew cleared a channel

for amphibious boats. These landed the tractors that cleared the way for crews building Wilkes Station. The land took several days to level, but construction here was done in less than the expected time.

By the end of March, Operation Deep Freeze II was completed, and the 70 IGY scientists and 248 supporting military men were staffing seven camps, ringing the Antarctic continent and pinpointed at two strategic sites in the interior.

The men who planned Operation Deep Freeze down to the last detail can take satisfaction in knowing that the men of science and the men of the Navy are set for the worst, and from the report by Capt. W. Mills Dickey, commander of all American Antarctic camps: "Morale is high." THE END



Protect Your Investment

WITH Wenzel TARPS

Tarpaulins don't cost . . . they pay! Damage to equipment and building materials, along with waste of labor time, can mean the difference between profit and loss. Protect your investment with Wenzel Tarpaulins and Windbreaks . . . the only tarps that give you extra strength at no extra cost. Wenzel Tarpaulins and Windbreaks have heavy duty rope bound in hem all around edges . . . makes tarps stronger . . . prevents rips and tears from starting . . . grommets won't pull out. You get better protection with the four famous Wenzel Brand Tarpaulins.

Section showing Rope Bound Edges.
U.S. Patent No. 2562005
Canada Patent No. 481432

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Water & Mildew Resistant
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Fire, Water & Mildew Resistant
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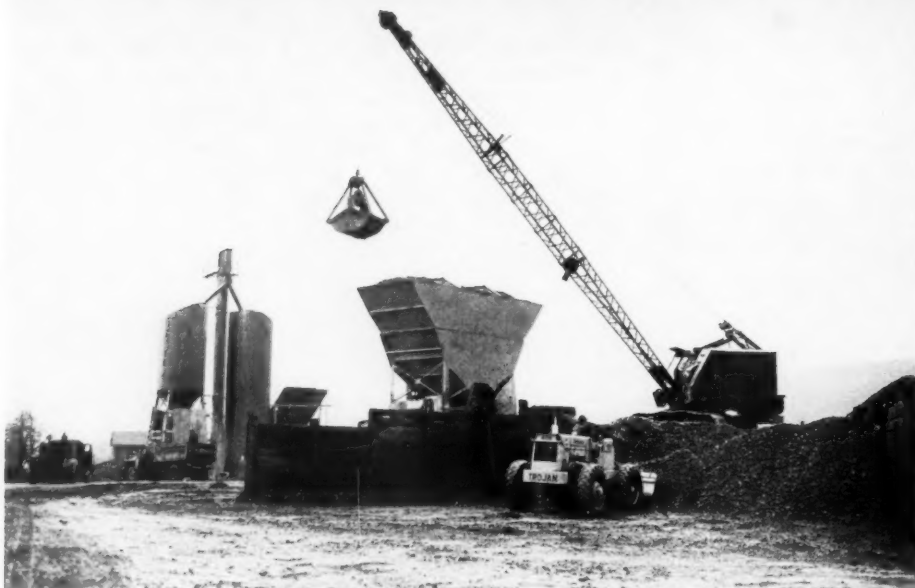
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Founded 1887

For more facts, use Request Card at page 18 and circle No. 223

On a cold overcast December day, a Bay City crane charges the Johnson aggregate bin while a Trojan front-end loader shapes the stockpiles for the U. S. 22 relocation near Hamburg, Pa. Steam from a job-built boiler heats aggregates in the bins during the shift; at night, steam is diverted to the stockpiles.



Winter work

Heated aggregates for concrete keep winter paving spread moving

Stone and sand heated in stockpiles

and in bins of concrete plant; subbase protected

in cold weather to permit paving train to work

by ANTHONY N. MAVROUDIS, field editor

Though concrete paving did not get rolling until September, 1956, and the bulk of the work was carried on during the winter months, crews placed up to 3,100 linear feet of 12-foot-wide

roadway lanes per 10-hour day during U. S. 22 reconstruction bypassing Hamburg, Pa.

This good production was achieved by H. W. Findley Construction Co.,

Crews place wire-mesh reinforcing over the 8-inch thickness of concrete. The Jaeger spreader stands by as the Koehring paver gets ready to dump material. Calcium chloride in each batch protects concrete against freezing.



The Rex paver, left, shuts down for maintenance as the Koehring paver, right, skips ahead to place concrete for the first 8-inch lift. A strike-off board levels the concrete so that reinforcing can be placed. Both pavers have heaters to heat water for batches.



The Koehring paver rides on the paved lane as it dumps concrete ahead of the Jaeger spreader, which has moved up to work with the first paver while the second is being serviced. Straw and curing paper lie outside the Blaw-Knox forms.



As additional concrete is dumped over the reinforcing, the Jaeger spreader moves ahead. The spreader is equipped with a rear-mounted vibrator unit to consolidate the concrete. Just behind it are two Blaw-Knox transverse finishing machines.



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Up to 3,100 feet of 12-foot-wide concrete roadway lanes per 10-hour day is production a contractor would be proud of in summer. H. W. Findley Construction Co., Carnegie, Pa., made it in winter, relying on a job-rigged boiler to supply steam to heat aggregates and concrete. The steam kept aggregates from freezing and also heated the concrete enough so that it stood at 60 to 100 degrees F as it left the two pavers used on the job.



The two Blaw-Knox double-screed finishing machines keep close together as they follow the spreader. A Koehring longitudinal float, hand-finishing with lutes, and a burlap drag complete the slab.

Carnegie, Pa., which used two pavers and took several precautions to keep this 6¼-mile job operative through winter. The completed project consists of two 24-foot roadways separated by a 20-foot grassed median. The stretch has 10-foot-wide crushed-stone outside shoulders through fill areas and 8-foot-wide shoulders through cut sections.

Boiler heats stone

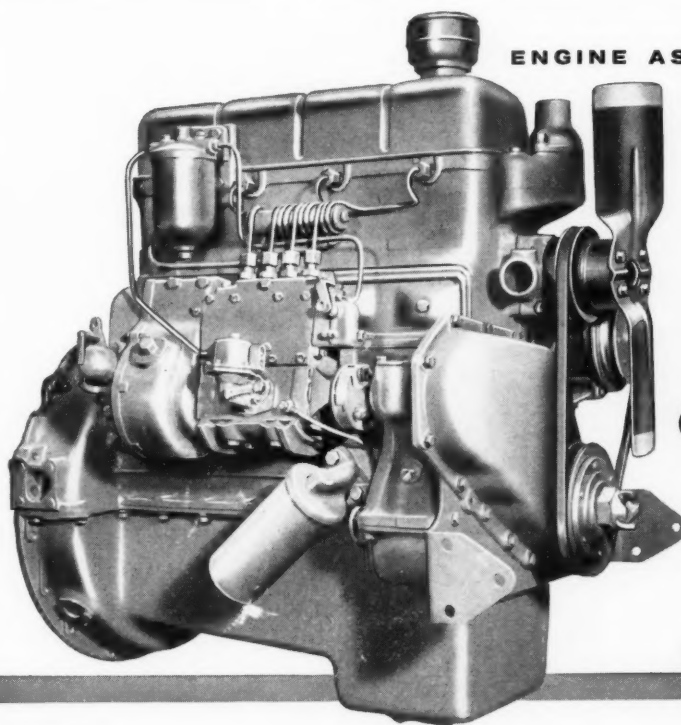
The batch plant supplying concrete for the pavers was capable of supplying heat to aggregates. This not only kept the material from freezing, but provided a concrete mix having a temperature of 60 to 100 degrees as it left the pavers.

The two-stop, drive-through-type batch plant, located midway on the 6¼-mile stretch, consisted of a Johnson 3-compartment aggregate bin and two Johnson cement silos. Surrounding the aggregate bin were three stockpiles—sand, 2B stone (½ to 1½ inch), and 3A stone (½ to 2½ inch). Trucks brought this material from a railroad siding 3½ miles away in Hamburg, and rear-dumped at the base of the proper pile. All stockpiles were constantly maintained by a Trojan front-end loader.

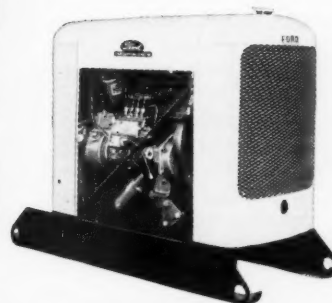
The 3-compartment aggregate bin was charged with stone and sand by a Bay City crane equipped with a re-handling bucket. Aggregates in the bin compartments were heated by live steam, which was fed to each compartment at 60 to 80 psi, by a coal-fired, contractor-rigged boiler adjacent to the bin.

The boiler, fired with soft coal 24 hours a day, also supplied live steam to the stockpiles. This was generally done overnight, when the stockpiles were covered with tarpaulins and the steam was directed to the piles rather than the aggregate bins. During the day, when paving was being done and steam was being furnished to the bin, the crane and the Trojan front-end loader worked the stockpiles to keep them from freezing.

Cement was protected in the 400 and 100-barrel silos and required no heating. Penn-Dixie and Nazareth
(Continued on next page)



ENGINE ASSEMBLY



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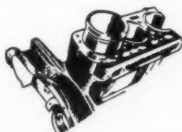
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Looking for really modern diesel power? You'll find it in the new 4-cylinder Ford "220" Diesel.

Advanced features such as replaceable cylinder sleeves, rotating exhaust valves, aluminum pistons and balanced crankshaft help deliver a full measure of continuous power. In fact, this 220-cu. in. diesel delivers more sustained horsepower at the flywheel than ever before possible in engines of comparable displacement!

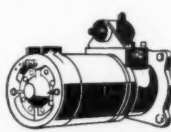
Overhead-valve efficiency boosts economy, makes servicing easier. Rigid deep-block construction extends engine life.

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Dependable high-torque 12-volt starting motor provides faster cranking speeds and delivers extra power for quick starts under all weather conditions.

FORD "220" DIESEL ENGINE SPECIFICATIONS

Basic Model.....	X
Type.....	4-Cyl. Diesel
Bore and Stroke—Inches.....	3 93 x 4.52
Displacement—Cubic Inches.....	220
Brake Horsepower {	Dynamometer..... 60 @ 2250
Continuous.....	48 @ 2250
Torque {	Dynamometer..... 151#' @ 1600
Continuous.....	121#' @ 1600
Compression Ratio.....	16 to 1

INDUSTRIAL ENGINE DEPARTMENT • FORD Division of FORD MOTOR COMPANY
P.O. Box 598, Dearborn, Michigan

YOUR JOB IS WELL-POWERED WHEN IT'S FORD-POWERED!

For more facts, use Request Card at page 18 and circle No. 224

(Continued from preceding page)

shipped the cement by rail to the Pennsylvania railroad siding in Hamburg. Here, the bottom-dump rail cars discharged into an under-track hopper, and the cement went by screw conveyor and enclosed bucket elevator to a storage silo. It was then transferred to the batch plant silos by enclosed trailer trucks. These emptied into the hopper which led to a 75-foot elevator feeding the two Johnson silos.

Large haul fleet

The contractor used fifteen Chevrolet batch trucks, each with a two-batch capacity, to haul the concrete mix to the two pavers placing concrete. At the aggregate bin, each truck received 1,664 pounds of sand, 1,390 pounds of 2B stone, and 1,380 pounds of 3A stone per batch. Batches were weighed by Johnson scales and released through double batchers by electric controls. At the second stop, a batch of 800 pounds of cement was weighed and dumped into each cement hopper of the batch trucks.

Between 3,000 and 4,000 feet of Blaw-Knox 10-inch steel forms were kept in position ahead of the lead paver on the roadway. The contractor had a total of 15,000 linear feet of forms on the project, since the slab required a 3-day curing cycle. The preparation of the form trench and the driving of form stakes were handled manually.

Ahead of the paving train, a Buckeye subgrader rode the concrete forms to remove excess material and obtain final subbase elevation. This was followed by a Buffalo-Springfield 5-ton 3-wheel roller, which compacted the 6-inch crushed slag subbase. This subbase was protected against any frost action by a covering of straw sandwiched between Sisalkraft curing paper.

Two pavers, a Koehring and a Rex, placed concrete for the 12-foot-wide roadway lanes. These lanes, 10 inches thick, were reinforced with wire mesh placed 2 inches below the surface of the slab.

A strike-off board, pulled by the Koehring lead paver, obtained an 8-inch thickness for the first lift of concrete. This paver rode on the shoulders or on the completed adjacent lane. Bolted to every other crawler pad of the pavers were 1½-inch-thick rubber shoes, which permitted the rigs to travel on a freshly cured concrete lane. When the wire mesh had been positioned over the first lift of concrete, the Rex paver placed the concrete for the remaining 2-inch thickness of the pavement.

A Jaeger spreader, equipped with a rear-mounted vibrator unit, led the finishing equipment. Just behind were two Blaw-Knox double-screed transverse finishing machines, and these were trailed by a Koehring longitudinal float machine. When this had passed, the surface of the concrete slab was hand-finished with 10-foot aluminum lutes and a burlap drag.

Water was supplied to the pavers by a 1,500-gallon water truck pulled



Chevrolet batch trucks stop to pick up loads at the aggregate bin and cement silo. Though the aggregate bins were heated with steam, the 400 and 100-barrel silos provided enough protection for cement during the cold weather.

by the Rex paver and a 2,000-gallon water truck pulled by the Koehring paver. The supply trucks, which fed about 260 pounds of water to each batch, were kept filled at all times by a 3,000-gallon water tanker.

Both pavers were equipped with Aeroil heaters that heated the water before it was mixed into the concrete batches. As an added precaution against freezing, the contractor mixed a solution of calcium chloride atop each paver, and this solution of 100 pounds of calcium chloride to 25 gallons of water was added to each concrete batch in the paver skip. This was done by injecting about 3¼ gallons of the calcium chloride solution while the skip was raised and emptying a batch to the mixers.

The same type of covering used to

New giant tire service



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STRATEGICALLY LOCATED
FACTORY RECAPPING
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AROUND THE CLOCK**



**These seven centers plus existing General Dealer facilities
assure off-the-road contractors of on-the-job service second to none!**

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protect the subbase—two layers of Sisalkraft paper with straw between—was used to cure the concrete. The covering was left in place for at least three days. Forms, however, were stripped after 48 hours. When the form stakes had been loosened manually, both forms and stakes were picked up by a Gradall and carried forward to be reset.

This \$1,900,000 project is part of the highway department's program to reconstruct U. S. 22 as a four-lane highway. Findley actually took over this contract in September, after the original contractor defaulted before paving could be completed. The contract had a September completion date, and Findley had to adopt winter precautions to complete the paving by a spring, 1957, deadline.

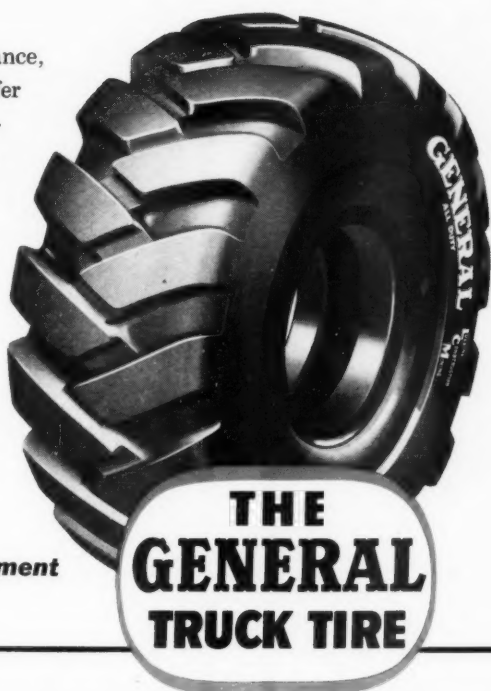
R. F. Dunkin was the project manager and L. O. Shoup, the superintendent, for Findley Construction Co. R. E. Lewis was the resident engineer and John Zernhelt, the plant inspector, for the Pennsylvania Department of Highways, which has Joseph J. Lawler as secretary. **THE END**

HERE'S A SUGGESTION for getting small areas cleared of snow, that comes from Chet Warner, yard foreman at Coleman Builders Supply, Inc., Pocatello, Idaho. The improvised plow is a 3/4-inch fir plywood panel braced with 2x4's. Warner is using a pallet full of shingles for weight on the forks of the Hyster machine, but almost anything else could be used. A piece of angle iron braces the plywood section against the bottom of the pallet, and another piece of angle iron along the bottom of the panel prevents excessive wear on the plywood.



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To assure peak on-the-job performance, General Tire and its dealers now offer "giant tire" users a complete and far-reaching network of service, recapping and repair stations from coast to coast. No matter what or where the job, be it construction, mining, quarrying or logging, deadline-pressured contractors can be sure of prompt, efficient, around-the-clock service from General, makers of exclusive NYGEN truck tires.



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**THE GENERAL TIRE & RUBBER COMPANY
AKRON, OHIO**

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DuBose elected president of F. H. McGraw in Canada

Charles DuBose has been named president of F. H. McGraw Co. of Canada, Ltd., building firm. Prior to his election DuBose was vice president of the firm's Toronto office. He succeeds Clifford S. Strike who became chairman of the board.



Charles DuBose, newly elected president of F. H. McGraw Co., of Canada.

Formerly with Frank Grad & Sons, Newark, N. J., DuBose has for many years been a practicing architect in the New York City area, and is designer of Monmouth Park race track in Oceanport, N. J.

The Canadian firm is affiliated with F. H. McGraw & Co., New York, N. Y., but is predominantly owned and controlled by Canadian principals.

Pan-Am Congress proposes new highway route

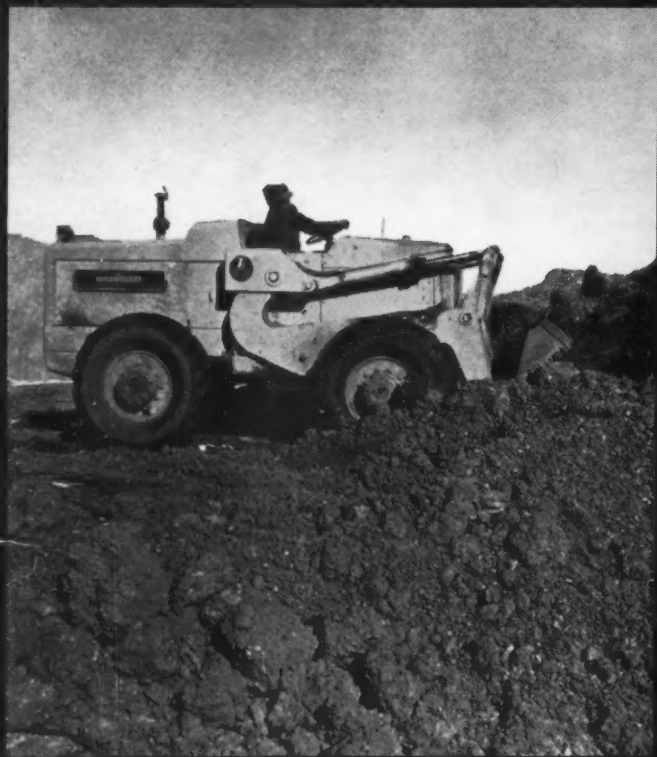
Late this summer the seventh Pan-American Highway Congress met in Panama City, Panama. The chief topic of the meeting was a proposal for a new connection of the Pan-American highway system that would extend from Rio de Janeiro, Brazil, to Bogota, Colombia. If the proposal goes through, it will bring these two countries economically closer to the Central and North American nations.

The projected highway would also establish connections with the local airlines and shipping lines. The proposed highway, when completed, would aid in developing the vast hinterland between Brazil and Colombia.

Old River form ties

Wood forms for the Old River control structures on the Mississippi River were designed by the Engineering Department of Superior Concrete Accessories, Inc., Franklin Park, Ill., which also supplied coil ties. This contribution by Superior was omitted from the Old River article in August C&E.

for Earthmoving



"More YARDAGE

is a vital factor for us", says "PAYLOADER" operator Leroy Jimerson of the Inland Construction Co. of Wichita, Kansas. "We've handled as much as 2,000 tons of material in an 11-hour day with our HO 'PAYLOADER'. It's got plenty of power", he says, "handles fine and is comfortable for the operator. We use it for everything — loading, mixing and general work, even pushing stuck trucks."

The exclusive Hough feature of 40° bucket tip-back and powerful pry-out action at ground level is your assurance of getting full bucket loads with less spillage and more yardage delivered with "PAYLOADER" tractor-shovels. Other peak yardage operating features "built-into" these 4-wheel-drive units include power-transfer differentials, "no-stop" power shift transmission and torque converter, planetary final drives, power steering and power brakes.

Three sizes are available to fit any job; speeds to 24 mph., bucket capacities to 4 cu. yds., carry capacities to 9,000 lbs. A Distributor will gladly demonstrate *more yardage* "PAYLOADER" features to you! The Frank G. Hough Co., 762 Sunnyside Ave., Libertyville, Ill.



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THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.
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123A

For more facts, use Request Card at page 18 and circle No. 226

for Public Works



"More VERSATILITY

is what we particularly like about our Model HH 'PAYLOADER'," says Joseph Paggi, Engineer for V. J. Constanzi, Inc., working on a prime contract for the 5-mile expansion of water mains in the City of Poughkeepsie, N.Y. "Right here on this job it's working 5 sections of construction during a normal day's routine. We use it in every phase of the job — moving equipment, clean-up, handling pipe, backfilling, etc. It has 'built-in' workability."

This all-around usefulness of the bucket-equipped "PAYLOADER", is multiplied by a full line of easily interchanged attachments, including hydraulic back-hoe, backfill blade, winch, blower and blade type snow plows and special buckets like the patented DROTT "4-in-1" bucket arrangement. There's no reason to invest in several special machines when, at a fraction of the cost, a single "PAYLOADER" can take care of most of your material-handling requirements.

Ask your Distributor about the multiple-machine usefulness of a "PAYLOADER" and proof that it is the most versatile equipment you can own. The Frank G. Hough Co., 762 Sunnyside Ave., Libertyville, Ill.



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123B

For more facts, use Request Card at page 18 and circle No. 227

for Building



"More FLEXIBILITY

for year-'round construction work is what we wanted and got in our Model HO", says A. Friederick and Sons Company, Rochester, N.Y. building contractors. They report, "We use this 'PAYLOADER' for just about everything — bulldozing, loading, material handling, pipe handling and many other jobs. It has been very satisfactory — easy to operate, plenty of power, excellent maneuverability."

One man on a rubber-tired "PAYLOADER" is a highly mobile "crew" because it can travel fast, under its own power, work on paved or unpaved terrain and handle many jobs. For example . . . a fork lift attachment can be quickly interchanged with the standard bucket to handle lumber, logs, pipe or palletized loads. Other quickly interchangeable "PAYLOADER" attachments include crane hook and back hoe. Last, but not least, there is the special patented DROTT "4-in-1" bucket that combines shovel, clamshell, scraper and bulldozer action in a single bucket arrangement.

It will pay you to have your Distributor prove "PAYLOADER" flexibility and performance on your work! The Frank G. Hough Co., 762 Sunnyside Ave., Libertyville, Ill.



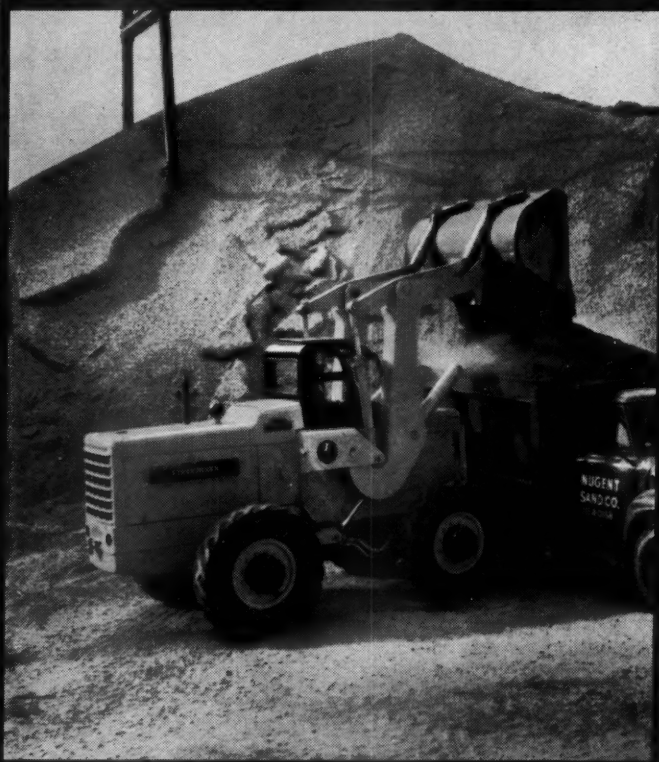
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123C

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for Sand—Gravel



"More PRODUCTION

is the big advantage of the new HO in our operations", says H. M. Muirheid, Superintendent of the Nugent Sand Company of Louisville, Ky. "Our operators particularly like its ease of operation. The new roll-back (bucket) gets a full load of material every time. It is quick and powerful . . . loads out a 12-ton load in 2 to 3 minutes operation and handles a 20-ton load in 4 to 5 minutes" . . . proof enough that no other wheeled tractor-shovel can match the productive capacity of the 4-wheel-drive "PAYLOADER" models.

Whether loading trucks, charging hoppers, stockpiling or spotting cars, the basic design of "PAYLOADER" tractor-shovels provides fast operating cycles, abundant traction, perfect balance, tremendous digging power and the ability to transport maximum bucket loads at high speeds with less spillage. Proven performance like this is available in the three 4-wheel-drive "PAYLOADER" units with carry capacities up to 9,000 lbs., bucket capacities up to 4 cu. yds. Call your nearby Distributor for an "on-job" demonstration. The Frank G. Hough Co., 762 Sunnyside Ave., Libertyville, Ill.



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123D

For more facts, use Request Card at page 18 and circle No. 229

State, county, city forces

Winter
ork

join to

keep snow off highways

Some states have winter weather that varies little from state line to state line. Not so Michigan, which may get only a touch of winter in southern counties and several feet of snow in the north. To cope with the varied conditions, the state uses its own forces, plus city and county maintenance facilities. And the techniques in use are as varied as the winter conditions that have to be met.

With severe winter conditions varying from a thin coat of ice in southern Michigan to 3 feet of snow in the north, the State Highway Department does an effective job of assigning equipment to keep the 9,300 miles of trunk lines clear.

To handle the big job, the highway department uses the services of county and city maintenance facilities, as well as the services of its own forces. The state-wide operations are supervised by the maintenance engineer in Lansing. Under his supervision are eight district maintenance engineers who supervise the county and city work within their district.

The actual snow-removal work is headed by the maintenance superintendent of streets in the 150 cities bisected by state trunk lines. The county is subdivided into districts, each with its own foreman and maintenance facilities. Although most of the snow-removal work is handled by the counties, the State Highway Department maintains its own personnel, equipment, and garages in 15 of the 83 counties.

Many operating bases

By using the services and equipment of both city and county, the State Highway Department has hundreds of operating bases distributed through the state for quick snow removal on nearby trunk lines. The office of the maintenance engineer in Lansing supervises the complex organization without interfering with the independence or initiative of the individual groups. The maintenance engineer in Lansing standardizes snow-removal procedures and keeps a close survey on all expenditures. Payment to the counties and cities is made on an equipment-rental basis.

36



A 3-ton, one-way plow does cleanup work on U. S. 23 in Alcona County. Winter in this area often brings three feet of snow, which is whipped into drifts by winds off Lake Huron.

S-12 "Eucls" prove their worth



Putting two sideboarded S-12's to work in a 10' wide drainage ditch at Freepert, California, A. Teichert & Son moved 400 yds. of good scraper dirt per hour on hauls of 700' to 1000'. Payloads averaged 15 yds.

Among medium size scrapers, the Model S-12 Euclid stands out as a real workhorse . . . on every kind of earthmoving job . . . in every type of scraper material! Power-packed with a 218 h.p. engine, this versatile "Euc" is cutting earthmoving costs to the bone wherever it works. Standard 24.00 x 25 tubeless tires provide plenty of traction and flotation for tough going. Hydraulic levers

control scraper operations . . . eliminate downtime and expense caused by cable breakage. The S-12 can turn in only 31 ft. and carries 17 yd. heap loads at speeds up to 21 mph. Pay-off advantages such as these are reasons why so many contractors say *Euclids are your best investment.*

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio



A fleet of seven S-12 "Eucls" is moving over 400,000 yds. of clay on a 3-mile section of the Illinois Toll Road for Carl Bolander & Sons . . . they recently completed a 750,000 yd. road job in Minneapolis.



At the 600 acre Lawrence Brook Housing Development in Brunswick, N. J., S-12 maneuverability, easy loading and fast time paid off for Arnold Bros.

**Michigan handles work from hundreds
of operating bases; combinations of chloride,
salt combat icing conditions**

The maintenance engineer also receives reports on adverse conditions each morning from the eight district maintenance engineers. The compiled reports are sent to the state police who make the information available

to the public. In the event of severe snow conditions, the office may allocate one of the big rotary or wing plows to be kept on a stand-by basis in one of a number of spots throughout the state.



Icing is the chief problem in the southern part of Michigan. During a storm in Ingham County, this spreader puts down a mixture of sand and salt. A conveyor belt at the bottom of the box drops the abrasive mixture onto a rotating disk; baffles control the width of the spread.

neiworth in any scraper dirt!



R. Hood & Son of Knoxville, Tenn. moved 10,000 yds. of ripped slate per week with six S-12's on 1000' hauls. Jim Hood likes the S-12 as best all-around scraper.



Worthington Construction Co. moved heavy clay and shale on the Route 22 by-pass near Allentown, Pa., with two S-12 Scrapers push-loaded by a "Euc" TC-12 Tractor.



In South Miami, Florida, three S-12's maintained high production on a 400,000 yd. land improvement job for Three Bays Improvement Co.



Shipling long established earthmoving selection records, Ben Ginter Const. Co., of Vancouver maintained 93% availability with six S-12's in ripped hard pan track on a Trans-Canada highway job.



O. J. Hoag made the dirt fly with five S-12 "Eucs" on construction of protective barricades and access roads at Wurtsmith Air Force Base in Michigan.



Acme Construction Co. used S-12 Scrapers in their equipment spread for grading a railroad spur to an industrial site near Twinsburg, Ohio.



Performance has paid off in low cost construction for N. A. Degerstrom on the Spokane Freeway, Geiger Air Base and a road construction job at Othello, Wash.



Sloan Construction Co. of Greenville, S. C. graded the site for a Piedmont & Northern Railroad warehouse with two Euclid S-12 Scrapers.



On a Florida housing site, Howard Thomas Const. Co. got 14 to 16 yd. heaped loads of sand with three S-12's. Availability of 98% has helped keep jobs ahead of schedule.

Kent County snow removal

Among the 68 county road commissions that contribute to keeping the state highways clear is the Kent County Road Commission, which has its main office in Grand Rapids. Its snow-removal procedures are typical of most counties in the southern part of the state. The frequent snowfalls and freezing rains make ice removal the big problem on the 200 miles of state trunk lines handled by the commission.

When bad weather hits in Kent County, the maintenance superintendent and the maintenance foremen of the seven districts dispatch all available ice-removal equipment to certain danger points on state highway routes. The district foremen have their own schedule for their areas. In general, they act without instructions from the main office in Grand Rapids. Contact is maintained between the main office and the district foremen by means of G-E two-way radios in the cars and pickups.

Liquid chloride used on ice

One of the more recent innovations for ice removal is the use of liquid chloride. A tank-truck equipped with a modified spray bar shoots the solution of calcium and magnesium chloride onto the pavement under pressure. The operation has proved particularly effective in removing thin ice. Loading is speedily accomplished, since the solution is pumped into the tank-truck from the 20,000-gallon storage tank in the yard. The county has a total of nine of these 1,000-gallon tank-trucks.

In the early stages of a storm the county also makes use of a mixture of sand, salt and chloride, a mixture of chloride and salt, or just plain salt, depending on the temperature and snow conditions. The flake chloride is used at times, in preference to salt, because it melts the ice when temperatures are very low. Dow, Solvay, or Columbia flake chloride is used, as well as Morton and International Rock Salt.

Ice and snow-removal equipment

The county—including the seven districts—has an impressive fleet of sand and salt-spreading equipment. There is a total of seven Hi-Way spreaders equipped with a V-type box, conveyor and spinner. The county also has 34 Swenson spreaders, which are attached to the box

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE



←For more facts, circle No. 230



In the northern part of the state, where heavier snows are more common, a three-auger rotary truck-mounted plow cuts a path for the V-plow that follows to clear the road.

of a dump truck. Both the Hi-Way and Swenson spreaders are operated by the drivers. In addition to these rigs, the county uses Ford and Chevrolet pickups to distribute bag salt. A man in the back of the pickup breaks the bags of salt into a funnel-like hopper attached to the rear of the truck. When spreading salt and sand, all trucks travel at speeds from 20 to 25 mph and cover one lane at a time.

When the snow becomes too deep for spreading equipment to operate effectively, the road commission makes use of Root and Pneu-Hydro underbody plows mounted on International and GMC dump trucks. The trucks are also equipped to carry V-plows or one-way plows, which can be mounted on a frame over the front bumper. For the deeper snows, truck wing-plows or Root V-plows mounted on either Caterpillar or Galion motor graders are used.

The counties in the north have similar organizations, but they are equipped to handle deeper snows. They have to be. In the Upper Peninsula, 72 inches of snow fell in fourteen days in November, 1956. In addition to the standard equipment, they use big V-plows mounted on tractors as well as rotary plows to keep the roads clear.

Personnel

The maintenance engineer for the Michigan State Highway Department is Edward D. Suino, who is assisted by N. W. Paquette. The maintenance superintendent for the Kent County Road Commission is Walter C. Afton, who acts under the supervision of Kent County engineer-manager Otto Hess.

THE END

Kansas highway commission moves into new home

The State Highway Commission of Kansas, which for 27 years occupied temporary offices, has a new home in the state's \$9 million office building in the heart of Topeka.

The commission occupies about 60,000 square feet of office space on the seventh, eighth, and ninth floors for administrative and operating departments. The vehicle department, which is administered by the commission, has 30,000 square feet of additional space on the third floor. The Highway Patrol has 7,000 square feet of office space on the ground floor.

Inter-American Highway to open next January

The Bureau of Public Roads has announced that, barring unforeseen delays, the Inter-American Highway will be open to motor travel next January for 2,725 miles from Laredo, Texas, to San Isidro in southern Costa Rica. By early 1959, the entire highway, from Laredo to the Panama Canal, should be open for 3,200 miles. The Pan-American Highway, of which it is a part, will eventually enable a motorist to drive from Alaska to southern Argentina.

Mexico has built the section of the Inter-American Highway inside her borders without assistance from the United States. Through the BPR, the

United States is now meeting two-thirds of the cost of completing the unfinished portions of the road from the southern border of Mexico through the six Central American republics to the Panama Canal.

Two impassable sections through the mountains remain. One, a 25-mile stretch into Guatemala from the Mexican border, is now being cleared, and will be finished by next January. Beyond San Isidro, Costa Rica, a much longer impassable section extends nearly 150 miles through rugged mountain terrain to Concepcion, Panama.

The United States has appropriated or spent through the BPR \$128.7 million in the last 23 years toward construction of the highway.

First on the job THE AUTOCAR

When the going is tough and slippery, Autocar 6-Wheelers make it every time. You can't beat them for bulling heavy loads through mud, sand, wet clay, deep snow and ice. And on soft roads they give you turnpike traction. The axles of 6-wheelers provide extra driving wheels—a double contact with the road that brings you safely through. There are several tandem axles to choose from with ratings from 34,000 to 70,000 pounds, and Autocar

engineers will help you choose the one that precisely meets your conditions of road and load. Then, in accordance with Autocar's custom-building practice, they design the rest of the unit to match—an integrated set of balanced heavy-duty components. The Autocar 6-Wheeler, like every other Autocar, has long life and stamina built into it. For the full story on the job these 6-wheelers can do for you, see your White-Autocar distributor.



AUTOCAR TRUCKS

AUTOCAR DIVISION

The White Motor Company • Exton, Pa.



FULLY INSULATED and storm-sashed field office trailers, like this one, make office work at construction sites an all-season job. This unit, by the Atlantic Trailer Corp., Baltimore, Md., gives the contractor a choice of thermostatically controlled oil, gas, or electric heaters. When winter is over, the office's air conditioners can be pressed into use.



Job after the storm AR 6-WHEELER

THE AUTOCAR 6-WHEEL CEMENT MIXER, capacities from 5½ to 14 cubic yards. Designed as an integrated, balanced unit, and specifically for the job.



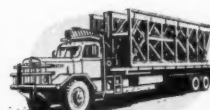
THE AUTOCAR 6-WHEEL HIGHWAY TRACTOR pulls heavy payloads on long hauls. A real profitmaker in those states where multiple axles permit additional payload.



THE AUTOCAR 6-WHEEL LUMBER TRUCK drives right into the felling area and picks up a profitable load, with the sturdy construction and braking power to control it.



THE AUTOCAR 6-WHEEL OIL FIELD UNIT, ideal for hauling heavy loads. A sure winner over a rough track and geared to keep up with traffic on the highway.



Kidde Constructors to design laboratories

Walter Kidde Constructors, Inc., New York, N. Y., has been awarded a contract by the Atomic Energy Commission for architectural design and engineering of supporting office and laboratory facilities for Princeton University's thermonuclear Model C Stellarator research project.

The Kidde contract also includes preparation of a master plan which will arrange Stellarator project buildings and services according to present and possible future requirements. The project in its initial stage will occupy 30 acres of the Forrestal Research Center's site in Plainsboro Township, five miles east of Princeton, N. J.

Caterpillar reorganizes

The manufacturing general office of the Caterpillar Tractor Co., Peoria, Ill., has been reorganized into three departments—planning and plant engineering, production control, and quality control.

L. J. Ely will give administrative guidance to the departments. Hugh Boggs has been named manager of planning and plant engineering. Roy McCluskey has been appointed manager of production control; and Dale Wright will be manager of quality control.

ASME to present award to S. P. Timoshenko

The American Society of Mechanical Engineers will present the Timoshenko Medal to the man for whom it was named, Prof. Stephen P. Timoshenko. The award, established this year, was conceived and planned by the Applied Mechanics Division of ASME, which Prof. Timoshenko helped to found.

Dr. Timoshenko was professor of theoretical mechanics at the University of Michigan until his retirement in 1946. He is the author of many books and the recipient of many awards. The first Timoshenko Medal will be presented during the ASME annual meeting on December 4, at the Hotel Statler in New York City, N. Y.

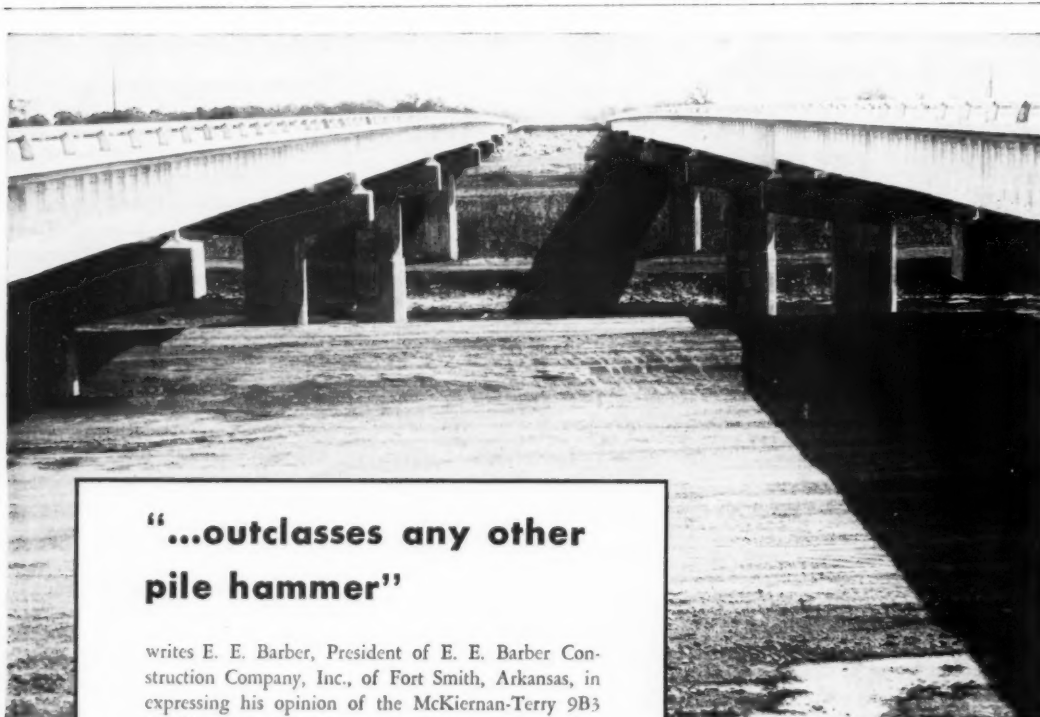
For more facts, use Request Card at page 18 and circle No. 231

Scrapers remove hilltop

to grade runway approach



C. F. Lytle, Sioux City, Iowa, excavates its half of the approach, taking the area down to finished grade. This lightens the load for push-tractors, since all loading is on the downhill slope. An A-C HD-21 tractor pushes a Cat DW21 as a Cat D8 dozer backs up for another push. Mounds of dirt, background, support airfield obstruction lights.



"...outclasses any other pile hammer"

writes E. E. Barber, President of E. E. Barber Construction Company, Inc., of Fort Smith, Arkansas, in expressing his opinion of the McKiernan-Terry 9B3 Double-Acting Pile Hammer on the type of pile driving for which it is intended.

Mr. Barber further writes:

"We have been using McKiernan-Terry pile-driving equipment for the last 35 to 40 years . . . We use the 9B3 exclusively for steel sheet piling and 10" H-beam piling and all wood piling. The 120 to 140 blows per minute that you get from a 9B3 hammer in sandy formation will drive a pile faster and further . . . The 9B3 also has an advantage in head room . . . I bought a 9B2 McKiernan-Terry Hammer in 1929 and used that hammer until the fall of 1955 before its efficiency was gone."

The experience of this representative contractor is being duplicated by contractors all over the country. You, too, can be sure of the same speedy pile-driving work and long pile-hammer service by using McKiernan-Terry hammers. Write for bulletin.

McKIERNAN-TERRY CORPORATION
MANUFACTURING ENGINEERS
82 Richards Ave., Dover, New Jersey

McKiernan-Terry
PILE HAMMERS

Twin bridge over the Verdigris River on the Oklahoma Northeastern Turnpike for which E. E. Barber Construction Company used a McKiernan-Terry 9B3 Pile Hammer. Photo by courtesy of Oklahoma Turnpike Authority.



MK409

A total of 5 million yards of earthmoving—with no compaction required—added up to a "dream" job for two contractors. The job of removing a hill that projected up into a runway approach zone at Ellsworth Air Force Base near Rapid City, S. Dak., was made even better—as far as the contractors were concerned—since two-thirds of it was done in the off season. Even though production dropped off slightly with the onset of winter, the job was completed by spring.

Faith may move mountains, but it took two contractors and 20 Caterpillar scrapers to move a hill at Ellsworth Air Force Base near Rapid City, S. Dak.

This was a 5,000,000-cubic-yard earthwork project designed to remove the top of a hill projecting up into the approach zone of a runway at the big Strategic Air Command base. One big bomber failed to clear it in making a landing and crashed; others had near misses. As a result, the U. S. Army Corps of Engineers prepared plans and awarded a \$1,259,962 contract to C. F. Lytle Co., Sioux City, Iowa, for removing the top of the hill. Lytle immediately sublet half the work to Ace Construction Co., Omaha, Nebr.

Both contractors made this a successful off-season job. Between the start of work, September 17, and the first blizzard, November 1, the two spreads moved 1.5 million cubic yards of material. Each contractor had 10 machines in operation, and they were hauling 90 to 100 loads per hour during the early part of the job. This accounted for an average of 48,000 pay yards per day for the two 10-hour shifts.

As the weather grew more severe, speed and production slackened off, but both firms continued working, moving the remaining 3.5 million cubic yards of earth during the cold months. Only topsoil placing and seeding remained to be completed after the frost went out of the stockpiles in the spring.

The approach zone graded under the contract was 3,000 feet wide at the far end, 1,500 feet wide at the end nearest the runway, and about a

**Contractors complete almost one-third of job before
first blizzard; production on 5,000,000-yard job
drops only slightly with onset of winter**

op

road successful off-season job

mile long. The first half mile extended the approach slope at a 1.5 per cent grade, and the second half mile went to a slope of 2 per cent. Backslopes on the sides of the graded area were flattened to 7 to 1. The maximum cut was approximately 52 feet deep.

All of the excavated material was wasted in a deep valley beyond the hill at the far end of the project. While no compaction was required, the waste area had to be finished to a 4 to 1 slope down from the end of the approach grade. This meant that all of the material had to be hauled up the approach grades and then wasted over the steep sloping hill at the end.

The work was all done on private grazing lands adjoining the base through working agreements negotiated by the U. S. Army Corps of Engineers. These agreements, and the job specifications, required the replacement of 4 inches of topsoil and the seeding of some 290 acres of the re-graded area. Farm fences had to be removed ahead of the work and replaced on the original lines when the grading was completed.

The approach zone obstruction lights had to be maintained during the grading and then replaced on the new grade at the end of the job. This required underground wiring to be dug up and strung on poles out of the way of the equipment during the grading operations. Mounds of dirt were left around these poles until the job was substantially completed.

Stockpile topsoil

The first job of the scrapers was to strip and stockpile all available material. The huge piles of topsoil were built at the edges of the grading area, where they were out of the way and yet convenient to get at.

Both contractors then plunged into the job of moving the huge volume of glacial gravel and weathered shale.

Lytle used a spread of ten Caterpillar DW21 scrapers, three Allis-Chalmers HD-21 push-tractors, a Caterpillar D8 dozer, and a Caterpillar No. 12 motor grader. Except when one of the scrapers was out of service for repairs, all ten were kept in use. Incidental equipment included six light towers for night illumination, each carrying its own Katolight 20-kw generator powered by a GM 2-71 engine.

(Continued on next page)



Part of the spread of subcontractor Ace Construction Co., Omaha, Nebr., works under a threatening sky. Eating away at the hill are a Cat DW21, foreground, and a DW20, both pushed by Cat D9's. Housings keep engine heat in and protect operators. Ace excavates its half of the 3,000 to 1,500-foot-wide area in 200-foot-wide strips.

WATCH FOR FIRESTONE WHEN THE HEAVYWEIGHTS ROLL!



Firestone Tubeless Rock Grips are performance champs on big jobs!

Firestone Tubeless Rock Grips knock down operating costs. Two great tread designs match toughness with traction to ward off all the bruising punishment the meanest terrain can dish out. Rock Grips cut down time-wasting tire changes because they're built for all types of terrain. You get full flotation to stay "on top" in sand and soft stuff, plus super-strong armored grip to take punishing runs over broken rock day after day. Safety-Tensioned Gum-Dipped[®] NYLON bodies, combined with cut-resistant treads, make these heavyweight haulers first choice for off-highway users. Your Firestone Sales Engineer will be glad to show you why they'll be your first choice, too. Contact him today through your local Firestone Store or Dealer.

Enjoy the Voice of Firestone on ABC television every Monday evening.

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Firestone

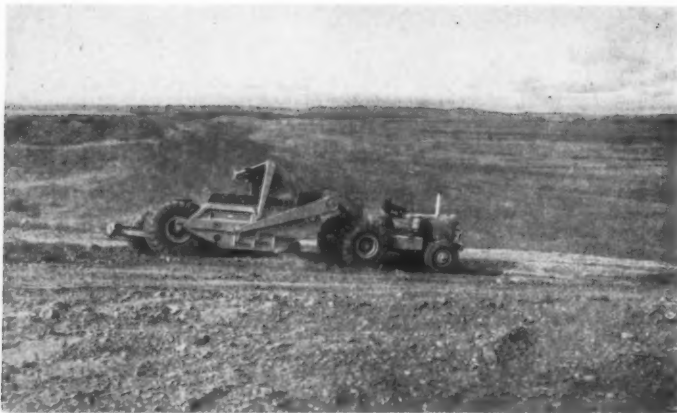
BETTER RUBBER FROM START TO FINISH

For more facts, use Request Card at page 18 and circle No. 234



ROCK GRIP WIDE BASE

ROCK GRIP



A Cat DW20 unloads in the disposal area, working against time as storm clouds gather over the Black Hills in the background. Heavy winter clothes protect the operator while heat housings protect the engine of the scraper tractor.

(Continued from preceding page)

The spread of Caterpillar scrapers used by Ace Construction Co. was made up of five DW20 and five DW21 machines. Assisting on the loading cycles were three Caterpillar D9 push-tractors. The remainder of the spread included a Caterpillar D8 dozer which pulled a Cat ripper when necessary, and a Caterpillar No. 12 motor grader and three light towers, each equipped with a Caterpillar D315 generator set.

Before the job could really get rolling, it was necessary for the contractors to determine the limits within which the fill would be placed. The contract specified a 4 to 1 slope from the end of the approach zone down into the deep Elk Creek Valley. However, the valley had not been cross-sectioned to determine how much area the 5 million cubic yards of dirt would cover.

Since the contractors wanted to start building the embankment from the toe, it was first necessary to take and plot the cross sections of the valley and then compute the toe line of the fill.

Since the natural slope of the hill down into the valley was too steep for the scrapers to go up and down, one of the first jobs was to grade haul roads down the side of the steep valley. Then the scrapers started building up the fill from the toe, working back up the hill as the fill rose. Using one haul road down into the valley and another one back, the scrapers dumped and spread their loads while traveling near top speed in fifth gear. They sometimes even dragged the bowls to assist in braking as they came down the steep bank. Then they had to shift down a gear or two to get back up to the top of the hill again.

A dramatic comparison of the power of the conventional models and of the newer models equipped with turbochargers was afforded when the scrapers took the steep return grade. Ace Construction Co. had two new DW20's and two new DW21's. The rest were older models. After dumping their loads, the newer, turbo-charger-equipped models were practically always able to come back up the grade in at least one higher gear than the older models. Sometimes they even passed an older model on the steep return grade.

Two Cat DW21's pass on the road to the fill area. The series of benches rising to the top of the hill are the dump roads. Fill placement begins at the toe and builds up until the entire area is on a 4 to 1 slope.



KOEHRING WORK CAPACITY in action



Big sewer program ahead — in practically all areas there has been a heavy increase in sewer construction to keep up with rapid population growth. A popular machine on this work is the Koehring 1-yard 405 hoe (above). It digs 22½ ft. deep, up to 43 in. wide over sidecutters.



At a new power plant, heavy machinery received careful treatment in the hands of Koehring 205 Cruiser®. This one-man-operated crane safely lifts up to 15 tons — has smooth, torque-converter drive, power-steering, 27½-foot turning radius, 30% gradability, 21.5 mph travel speed.

Here are some figures that will interest you:

KOEHRING MODEL	SIZE DIPPER	LIFT CAPACITIES	
		(Crawler ratings based on 75% of tipping load. Rubber-tired machines — 85% of tipping load.)	
205 CRAWLER	½-Yd.	20,000 lbs.	at 10-ft. radius
205 ON RUBBER	½-Yd.	30,000 lbs. 14,000 lbs.	at 12-ft. radius at 20-ft. radius
305 CRAWLER	¾-Yd.	30,000 lbs.	at 12-ft. radius
305 ON RUBBER	¾-Yd.	50,000 lbs. 15,000 lbs.	at 10-ft. radius at 30-ft. radius
405 CRAWLER	1-Yd.	40,000 lbs.	at 12-ft. radius
445 ON RUBBER	(Crane only)	90,000 lbs. 40,000 lbs.	at 15 ft. radius at 25-ft. radius
605 CRAWLER	1½-Yds.	72,300 lbs.	at 12-ft. radius
805 CRAWLER	2-Yds.	104,300 lbs.	at 12-ft. radius
1205 CRAWLER	3-Yds.	190,000 lbs.	at 12-ft. radius

Want more information?



See Koehring distributor.



Shopping center going in — Development of large-acre tracts for suburban shopping centers has created considerable new business for grading contractors. A typical job is shown here. The dragline is a Koehring 305, which has a capacity of ¾ to 1-yard — (for more details see chart).

K729

EXCAVATORS • CRANES • DUMPTORS® • PAVERS • FINISHERS • CONSTRUCTION MIXERS • MUD-JACKS®

CONTRACTORS AND ENGINEERS

Earthmover's dream

In at least one respect, this job was an earthmover's dream—5 million cubic yards of earthwork had to be done and not a roller was needed on the job. Rarely were any other machines but scrapers seen on the fill. The scraper operators spread their loads carefully in thin lifts so that the machines following could travel over the same area without difficulty. Only occasionally was it necessary for one of the motor graders to make a trip to straighten up bad spots in the haul roads.

The two contractors divided the work down the longitudinal center

line of the job. Lytle's crews began working practically the full width of one half, taking the area down to finished grade as they moved back from the edge of the valley. This made it convenient for practically all of the loading to be done on a relatively steep downhill slope. Taking advantage of this slope, the contractor lightened the load for the push-tractors and speeded the scraper loading cycle. The push-tractors, however, always had to travel back up the slope to get into position to start pushing the next scraper.

Using a somewhat different attack, Ace crews took about a 200-foot-wide



Snow and dust begin to blow with the oncoming storm, but Caterpillar DW21 scrapers continue loading on a downhill grade, aided by an Allis-Chalmers HD-21 push-tractor and D8 dozer.

204-ft. concrete piers —

To support a 1,040-ft. truss-span bridge, contractor built two piers, towering 204 feet above river-bed. Each pier contains over 2,000 cu. yds. of concrete, and approximately 197,000 lbs. of reinforcing steel. Using slip-form process, the concrete forms were raised up the column by hydraulic jacks as work progressed. Koehring 605 crane with bucket placed most of the concrete. On upper sections, bucket was hoisted from scaffold at the top. Total construction time: 3 months.



strip parallel to the center line and excavated this strip the full length of the job. They then came back and started a similar strip alongside the first. With this method, crews worked across the Ace half of the slope.

Most of Ace's loading was done on grades that were almost level. The push-tractors loaded two or more scrapers in one direction, then turned around and loaded the same number on the way back. The scraper operators picked their loading spots in advance so that they were heading in the right direction for the pusher that was to load them. While there was no grade advantage in the loading cycle, the powerful D9 push-tractors seemed to get heaping loads on the scrapers in a very short run.

In both cases, the first cuts were made at the high end of the approach zone next to the valley where the material was to be wasted. This first excavation was hauled down to the toe of the slope—the furthestmost part of the fill area. Then, as the excavation moved away from the edge of the valley, the fills built up, and the haul remained nearly constant. An average haul distance for the entire job was about three quarters of a mile.

Both contractors were loading the scrapers full in 20 to 35 seconds. With ten machines in operation, they were hauling 90 to 100 loads per hour. Early in the job, the two 10-hour shifts moved an average of 48,000 pay yards per day, but this figure dropped off as winter weather slowed down the work.

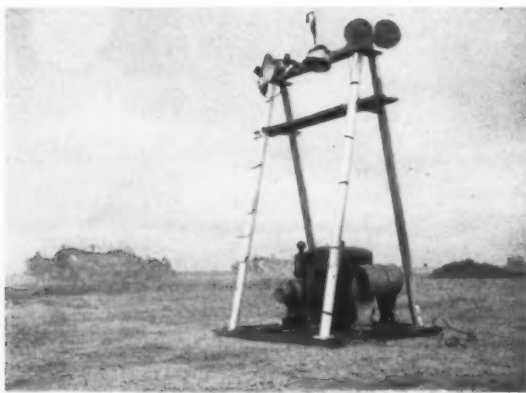
Lubrication

All of the tractors and scrapers on both spreads were lubricated once each day. Lytle used a service truck equipped with a Lincoln lubricating system and Wayne air compressor. A crew of three workmen lubricated all of the equipment in the three-hour down period between the night and day shifts.

Using an Alemite lube rig with a Schramm compressor and a Kohler light plant, the Ace service crew of three workmen lubricated their spread during the day shift, stopping the rigs one at a time. When there were no unusual service operations to be done, the rigs were lubricated and

KOEHRING DIVISION OF KOEHRING COMPANY, Milwaukee 16, Wis.

For more facts, use Request Card at page 18 and circle No. 235



Short winter days and two 10-hour shifts mean a lot of artificial light is needed. This light tower is powered by a Katolight 20-kw generator set driven by a GM 2-71 diesel engine. Four such towers are in the cut and one on the fill, while one serves as a standby.



THE BUFFALO-SPRINGFIELD K-45 KOMPACTOR

How to select compaction equipment

The logical question to ask yourself when you are ready to buy new compaction equipment is: "Exactly what do I need the equipment for and how will I use it?"

BASE FILL COMPACTION—This type of compaction demands equipment that will handle a wide variety of materials, give you the highest degree of compaction with the fewest passes. Buffalo-Springfield's revolutionary K-45 Kompactor is proving a real money-making answer for this type of work. It is self-propelled, relies on the "Interrupted Pressure Principle." All compaction effort is directed downward. Contractors testify they are meeting density requirements in one-fourth the time normally required with other compaction equipment.

FINE GRADE FINISHING—Buffalo-Springfield offers six 3-wheel rollers, ranging in capacity from 5 to 15 tons, to handle the large variety of materials found in fills, subgrades and unfinished bituminous pavements. The variable-weight 3-wheel roller is ruggedly built for years and years of hard, maintenance-free work.

Buffalo-Springfield's thoroughly-proved 3-axle tandem "walking beam" roller provides up to 60% greater tonnage compacted per day in superhighway construction, airport and military establishment jobs where specifications are extra strict.

ASPHALT FINISHING—Two-axle Tandem Rollers are designed especially for all surface finishing jobs. Ranging from 5 to 16 tons, Buffalo-Springfield Tandems are used for

fueled in 17 minutes—hardly enough time for the operator to get a cup of coffee and warm up. On the night shift, the machines stopped only for fuel.

Both contractors maintained field shops where minor and major repairs and overhauls were made when necessary. Diesel fuel was delivered by truck transport to the contractors' storage tanks. Lytle had a 17,000-gallon storage tank and Ace had a 10,000-gallon tank. The fuel was pumped directly from the storage tanks to the machines.

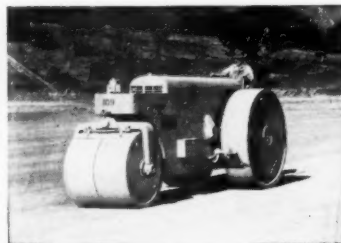
Finishing touches

The grading operation continued through the winter, and by spring the scrapers were ready to spread the topsoil and seed it. The material was spread in a 4-inch lift over the entire approach zone—including the side slopes. This 290-acre area was seeded with both a quick-growing nurse crop and a permanent sod mixture. The contractor was required to guarantee the grass crop, and the contract quantities included 16.8 million gallons of water for this purpose.

Personnel

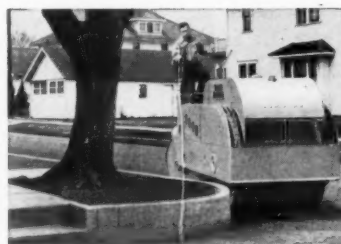
This project was planned and supervised by the Rapid City Area office under the jurisdiction of the Omaha District of the Corps of Engineers. Lt. Col. Sidney Stern is area engineer, and Col. T. J. Hays, III, is district engineer. On the Area staff are: assistant area engineer E. J. Draper, chief of heavy construction W. D. Withee, project engineer for grading Henry Happe, and project inspector Gene Parks.

The field staff for C. F. Lytle Co. was headed by general superintendent Vernon Willaford and office manager Harold R. Olson. Superintendent for Ace Construction Co. was Donovan Haugan, who was aided by assistant superintendent Louis Binder and office manager Bill Mead. **THE END**



3-WHEEL ROLLERS

heavy-duty highway and public works projects, and all types of finishing, maintenance and repair work. A wide selection of models for the biggest to the smallest jobs are designed for long-life and profitable operation.



TWO AXLE TANDEMS

SHORT ROLLING JOBS—Buffalo-Springfield's 3-5 ton portable roller is widely used for rolling driveways, sidewalks, parking and playground areas, and for patching and light fin-



3-5 TON PORTABLE TANDEM

ishing jobs. It is highly maneuverable and portable from job-to-job. Write today for full information on the type of equipment you need—or see your nearest distributor for an on-the-job demonstration.



THE BUFFALO-SPRINGFIELD KX-3 AXLE TANDEM



BUFFALO-SPRINGFIELD
Roller Division-Koehring Company
SPRINGFIELD, OHIO

For more facts, use Request Card at page 18 and circle No. 236

Mullen executive director for Minnesota roads group

The state-wide citizens' organization, Minnesota Good Roads, Inc., has made John H. Mullen its executive director.

Mullen's professional career dates from the "Model T" days of road building. As Deputy State Engineer for roads in 1909, he played a major role in planning the Minnesota state trunk highway system. Eight years later, as deputy highway commissioner and chief engineer, Mullen directed the formation of the engineering staff, the financial setup, and working procedures for the department.

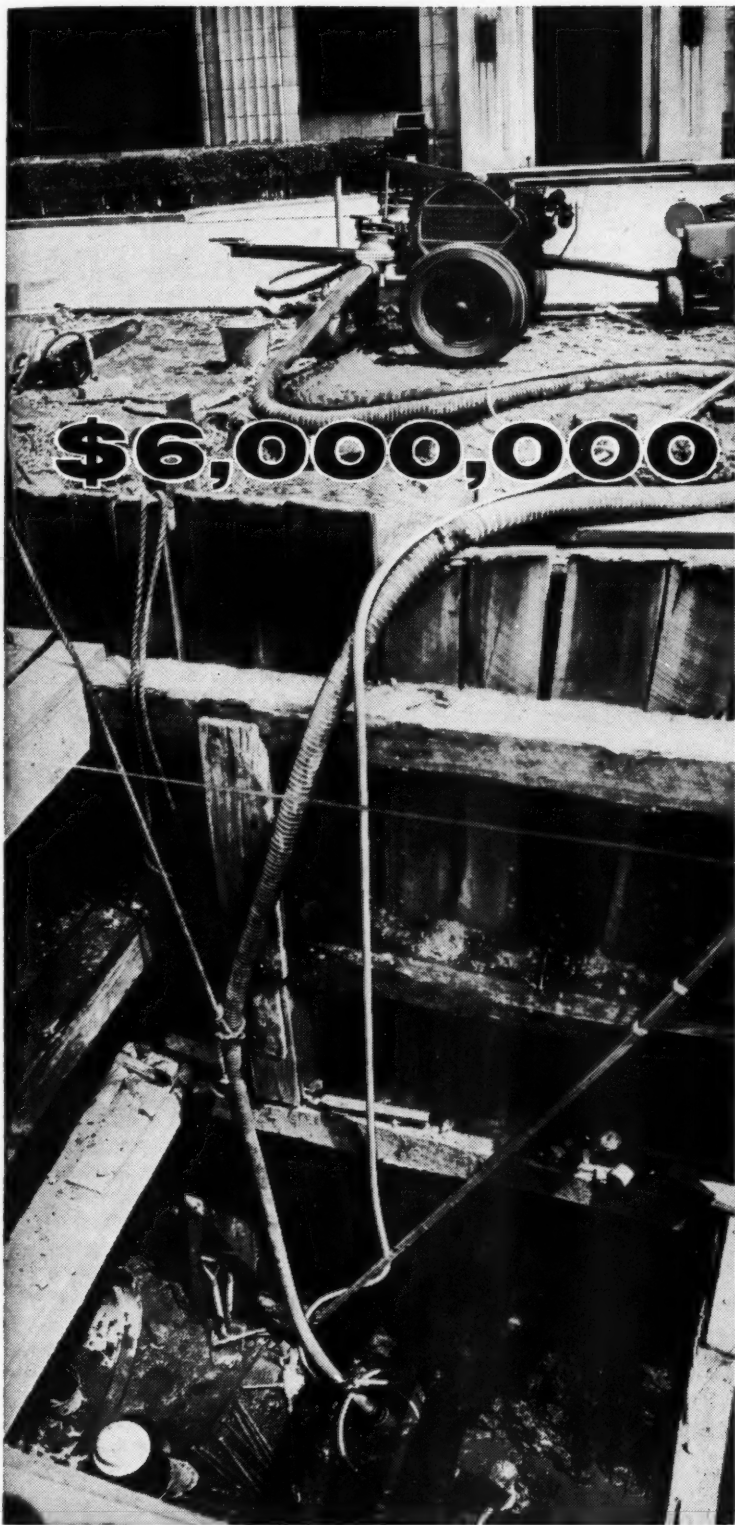
Then, in 1925, Mullen became associated with Nelson, Mullen & Nelson, Inc., a Minneapolis construction firm.

On his retirement from active business, Mullen joined the Associated General Contractors of Minnesota as a full-time consultant in 1954. A registered highway engineer, Mullen holds membership in the Minnesota Society of Professional Engineers and is a past president of the St. Paul Engineers' Society.

Fruin-Colnon appoints

Thomas McAleenan has been appointed purchasing agent and assistant treasurer of the Fruin-Colnon Contracting Co., St. Louis, Mo., and Indianapolis, Ind. McAleenan succeeds Edwin F. Stuessie who retired.

CONTRACTORS AND ENGINEERS



\$6,000,000

Sewer Project Under Construction

Sewage Bypass and Seepage Solved by Marlow Pumps

The City of Hoboken, New Jersey, is currently engaged in improving its sewer system and erecting a new sewage disposal plant . . . a project that will eventually cost the city \$6,000,000. Work on the sewer line was started in May, 1956, by Berlanti Construction Company at Newark and First Street and will be ended at Seventeenth and Jefferson, 2½ miles away, where the new plant will be located.

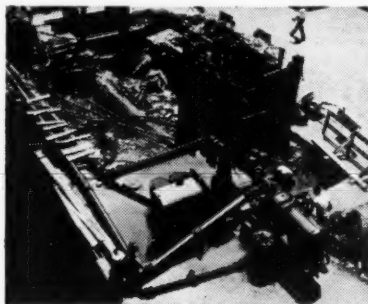
Dewatering the trenches that were dug to lay the new sewer pipe was a 24 hour a day job because water from the Hudson River was constantly seeping into the excavation. To cope with seepage, Berlanti used more than 20 Marlow "Mud Hogs" and self-priming centrifugal pumps.

At one point during the construction, Berlanti used two Marlow self-priming centrifugal pumps to by-pass raw sewage. Running alternately, 24 hours a day, these two big engine-driven pumps handled 1,400,000 gallons and during the peak periods as much as 1,700,000 gallons per day.

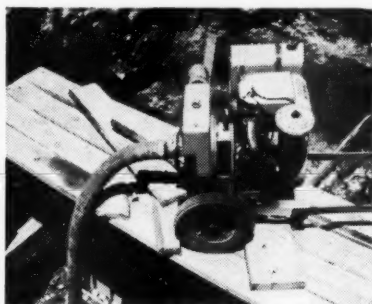
Even though running on a round-the-clock schedule, these Marlow pumps turned in enviable performance records. According to Jack Hunter, Berlanti Master Mechanic, the pumps did a good job with very little maintenance required. He's more than satisfied with them.

If you have a tough dewatering problem, look to Marlow for your answer. Marlow builds a complete line of AGC rated contractor pumps as well as famous "Mud Hog" diaphragm pumps for handling muddy and trash laden liquid. For complete details write today for a copy of Bulletin C-04 and the name of your Marlow dealer.

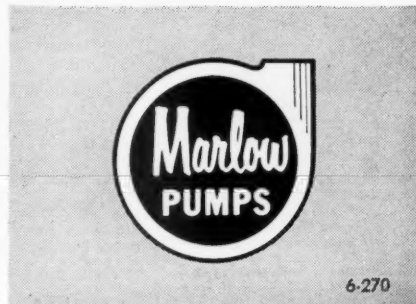
This Marlow "Mud Hog" diaphragm pump, working on a deep suction lift, removes muddy, trash laden seepage water from the bottom of a sewer trench.



These two big Marlow self-priming centrifugal pumps were used to bypass raw sewage during the construction of the sewer line. The pumps handled as much as 1,700,000 gallons per day.



Berlanti Construction Company used small Marlow self-priming pumps for dewatering service on this sewer line project. These portable, dependable Marlows could be placed anywhere and do the job well.



6-270

**DIVISION OF
BELL & GOSSETT CO.**

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Maintaining winter haul roads is easier when

Treated abrasives are stockpiled for use against ice and snow

Mixing calcium chloride with abrasives is a big job usually done early in the season. The calcium chloride forms a coat on the abrasive particles and enables them to embed in ice. Moist, thoroughly mixed abrasives stick to icy pavements and provide immediate traction.



"This Anthony Trailer carries two extra tons every time it leaves the quarry ...and outhauls any six-wheeler I'm familiar with."



The Teleramic "V" Seal Hoist Is A Major Factor In Frameless Trailer Success

Proven "V" seal packing is only one of many quality features in the Teleramic Hoist design. Because the dry operating "V" seal is self-adjusting, repacking or manual adjustment of the Teleramic cylinder is very rarely needed. "Truss rings" encircle and reinforce the ends of each cylinder tube to prevent "flaring". Extra long bronze bearings and long overlap of the cylinders help keep them perfectly aligned.

A. J. Jalovec, Sr.
A & J CARTAGE
5953 Archer Road, Argo, Ill.

Like you, Mr. Jalovec likes to see fixed job costs go down. Every two tons of extra legal payload he hauls with his Anthony Trailers means less time per job. Because this frameless dump body is lighter for its load capacity, gas and oil costs are also cut. Mr. Jalovec says maintenance on this dump body is "nil" . . . Anthony distributor service is "wonderful".

A & J Cartage generally uses this Frameless Trailer to haul 30,000 pounds of payload from the quarries to ready-mix batch plants. There, his drivers dump right into the hoppers.

The hoist is in an extreme forward position with much of its weight up front. That's why Mr. Jalovec can haul more legal payload on the important rear axle.

To cut costs on your jobs, check into the long list of Anthony Teleramic Hoist and Dump Body models. One is tailored to suit your particular operation.

Buy The Dump Body That Has The Service

Over 100 Anthony Distributors are located nationwide. At least one is convenient to you . . . ready to give immediate service on all Anthony equipment. Complete descriptive literature is now available on Anthony Frameless Dump Trailers and Teleramic Hoists. No obligation, of course! Write to: 1754 Baker St.

ANTHONY COMPANY • Streator, Illinois

For more facts, use Request Card at page 18 and circle No. 238

Regardless of the type of construction done by a contractor, there is little doubt that a planned program of winter maintenance procedures pays.

Keeping roads in and around a construction project clear of ice and snow so that vehicles can move on schedule surely and safely is one of the big problems of all contractors during winter months. Many of them have already used techniques employed by highway departments.

The greatest efficiency in winter maintenance procedures can be gained only if a planned program is set up and carried out throughout the project. This program should include the use of abrasives and calcium chloride. Highway engineers found many years ago that treated abrasives are the most dependable means for providing immediate traction for vehicles as well as immediate ice-melting action during coldest weather.

The use of abrasives and calcium chloride to keep roads clear of ice and snow is a regular feature of highway department maintenance programs in winter. And there is no reason why contractors cannot cash in on this method to keep their haul roads open during cold-weather work. A well planned, small-scale winter road program by a contractor will increase the cost of the job, to be sure, but it may also be the factor that puts the job in the black.

Abrasives are usually treated at the rate of 50 to 75 pounds of calcium chloride for each cubic yard of sand or cinders. The abrasives are thoroughly mixed with the calcium chloride and then stored in strategic areas.

Effectiveness

Treated abrasives are most effective, because they tend to embed themselves immediately in ice and provide traction for vehicles. Dry abrasives often blow off the roadway surface. When this happens, the area must be re-treated with abrasives or treated abrasives.

There are other advantages in using abrasives that have been thoroughly mixed with calcium chloride prior to the winter season. These abrasives are extremely workable, even

W inter work

In coldest temperatures. Since stockpiles do not freeze up, the material can be handled easily by laborers or mechanical spreaders.

As far as economy is concerned, experiments have shown that treated abrasives will go three times as far as untreated abrasives. This means that greater areas may be made skidproof with abrasives treated with calcium chloride. Cinders are generally more desirable than other abrasives because they lodge in the ice easily and provide good traction for tires. Sand or stone screenings may also be used. But for most purposes local availability and the cost of abrasives will play a great part in determining which type of material will be used.

Since contractors conduct their winter maintenance operations on a smaller scale than highway departments, they should consider storing abrasives in strategically located stockpiles so that the material is close to areas where ice or snow may hamper traffic on the job. In contrast to a highway department, which might construct storage bins to protect the abrasive piles in inclement weather, the contractor may only have to throw a tarpaulin over the storage pile for protection.

Direct chemicals

Direct chemicals have been used for melting ice during severe storms or during emergencies. Calcium chloride is the fastest-acting ice melter, and it is often recommended under these conditions. Highway departments use it at rates of approximately one pound per square yard of surface. Advantages of the direct chemical approach to ice melting include eliminating excess storage space, less handling of materials, and the fact that a cubic yard of material goes farther.

Direct chemicals are most beneficial in areas where there is a great amount of traffic and where the ice must be quickly removed. Last winter several organizations stored bulk quantities of flake calcium chloride outside in winter weather, covering it only with a tarpaulin. The material stored very well for periods up to six weeks, and even then it was in excellent condition, with only a slight crust—that could be easily broken up—on the surface of the pile. Using this method, contractors might store bulk quantities of calcium chloride on the job and use it in winter maintenance procedures.

With heavy traffic moving quantities of heavy and bulky materials on construction projects, most contractors are well aware of accident-prevention methods. In this regard, they pay strict attention to details which will eliminate accidents. And with the increased amount of year-round construction work, most contractors keep access roads and parking areas free of ice and snow during winter months.

THE END

For more facts, circle No. 239→



Many cities take advantage of the quick action of treated abrasives, and store them in small piles in strategic areas for emergencies. Contractors can follow this procedure in and around job sites where icy conditions may impede traffic.

TS-260

- 200 hp
- 11 cu yd struck
- 14 cu yd heaped

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ALLIS-CHALMERS

Engineering in Action

Special auxiliary wheels . . . to meet highway weight limits. Twin front wheels are attached quickly and easily to distribute weight . . . let you move the TS-260 between jobs on its own power.





"Groundbreaking" for one of the plant buildings is no mere ceremony. The Cat D8 tractor pulls a LeTourneau ripper to break up the frozen ground so that the dragline, background, can continue excavating. Earthwork was subcontracted by Leon Joyce, Rochester, Minn.



Despite a snow storm, a Lorain TL-25A backhoe excavates a trench for underground utilities at the plant site. Carlisle Fraser, also of Rochester, is handling this job.



Ready-mix concrete is chuted from a Rex transit mixer at 70 degrees F. It is consolidated by Maginniss vibrators, powered by the Hi-Lectric generator in the foreground.

Excavation, steel, concrete work carries plant job through winter

Rippers break frost in winter excavation for plant, utilities; cranes aid transit-mix trucks in placing heated concrete for walls

by RALPH MONSON
field editor

Losing only two days because of extremely cold weather, crews worked through the entire winter on a large manufacturing plant for International Business Machines Corp. at Rochester, Minn. The lost time was undoubtedly less than would have been lost because of rain during the average summer job.

A late start in the fall of 1956 left only time for partial site grading, some work on the essential storm and sanitary sewer system, and completion of part of one of the plant buildings before winter set in. The building was the warehouse, which is housing limited manufacturing facilities while

Winter Work



Whenever it was impossible to place concrete direct from transit mixers, the warm concrete was brought to wall forms by a crane with a Gar-Bro 1-yard laydown bucket. Tarps are being spread over the forms to hold in the heat provided by LPG burners.



Two Bay City motor cranes use 70-foot booms and 15-foot jibs to place steel for the frame of the plant. Industrial Construction Co., Minneapolis, Minn., did almost all of this work in winter.

CONTRACTORS AND ENGINEERS

The economy of getting the International Business Machines Corp. plant at Rochester, Minn., completed months earlier than the expected date more than made up for the slightly increased cost of carrying the job on through the winter. Earthwork, steel erection, concrete construction, and work on outside facilities were done with only two days lost because of extreme cold—less time than is lost in ordinary summer jobs.

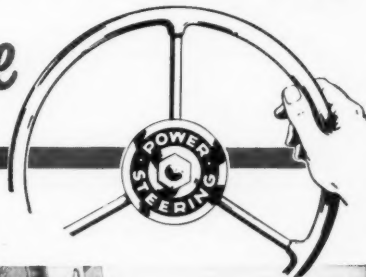
After a pour has been completed, workmen finish erecting the canvas enclosure. In this case, the canvas is built up high with sloping sides so that it is far enough from the heater and cannot catch fire.



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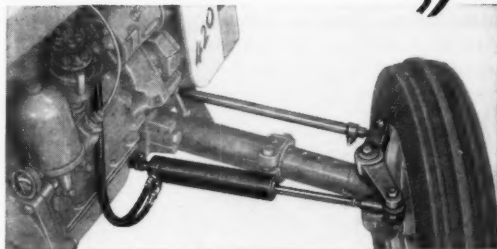


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the rest of the plant is constructed.

But work did not stop with the frost or the first snowfall of the season. It continued right through the entire winter at a pace that probably equaled the usual summer production.

Earthwork, outside utilities, concrete construction, and steel erection, together with numerous incidental operations, were carried on during the cold months. Workmen, seemingly unhampered by their heavy protective clothing, were happy to have work during this season of the year when they usually have no income.

Construction costs undoubtedly were higher than for warm-weather construction, since frost had to be broken, concrete heated and protected, snow removed, and similar extra work done. But these slightly increased costs were of minor consequence when weighed against the value of getting a multimillion-dollar manufacturing plant into operation months earlier than would otherwise be the case.

The general contractor for the plant is Johnson, Drake & Piper, Inc., Minneapolis, Minn. Earthwork and outside utilities were handled, respectively, by Leon Joyce and Carlisle Fraser, Inc., of Rochester.

The project was planned by Eero Saarinen & Associates, architects, of Bloomfield Hills, Mich., with Smith, Hinchman & Grylls, Inc., Detroit, as engineering consultants. The new plant, located on a 400-acre site at the north edge of the city, will contain more than 500,000 square feet of floor space. It includes four one-story manufacturing wings, two two-story educational wings, two two-story office and administration wings, a one-story central cafeteria, a separate warehouse, and a powerhouse.

Most of the structures are of steel frame construction. Exterior walls are of colored porcelain-enameled, insulated, aluminum panels. Roofs are metal decks with insulation and built-up roofing. The plant will be heated by steam and air-conditioned by cold

(Continued on next page)



In an area where a tractor and ripper cannot be used, a fire is kept going so that ground can be thawed out for the start of wellhouse construction. The truck dumps a load of scrap wood and paper at the edge of the fire. Metal sheets are used to cover the fire and hold heat in the ground overnight.

(Continued from preceding page)

water, and both heat and air conditioning will be produced by units in the power plant.

In spite of the late start last season, the plant, which is estimated to cost in excess of \$8 million, is expected to be substantially completed and in operation early in 1958.

Site grading

The earthwork subcontractor, Leon Joyce, put a large spread of equipment on the site as soon as he was awarded the contract for grading the building areas. With a fleet of 34 ma-



Non-frozen sandy material, brought to the site for backfill around foundation walls and foundations, is being compacted by a Jay 12 tamper made by the Jay Corp., Columbus, Ohio. Frozen chunks of ground were hauled away.

jor units, including eleven rubber-tire Euclid and Caterpillar scrapers, five Gar Wood tractor-drawn 25-yard scrapers, a Euclid TC-12 push-tractor, and a number of Caterpillar D8 tractors and No. 12 motor graders. Joyce completed the basic grading of the building area before the ground froze.

But the many excavations for basements, footings, tunnels, and other structures kept some of the earth-moving spread in operation all winter.

As soon as frost began penetrating the ground, a LeTourneau ripper pulled by a Caterpillar D8 tractor went to work breaking the frost. A second D8, equipped with a dozer, helped push the ripper when the going got really tough. These rigs went as deep as 3 feet to rip the frost.

The ripper made a first pass, cutting down a foot or two. Then the dozer cleaned away the broken pieces, exposing a new surface so that the ripper could come back for an effective second cut.

A substantial part of the winter excavation was done by a dragline using a Hendrix 1¼-yard bucket. After the frost had been broken by the rippers, the work of the dragline was not materially different from a usual summer operation.

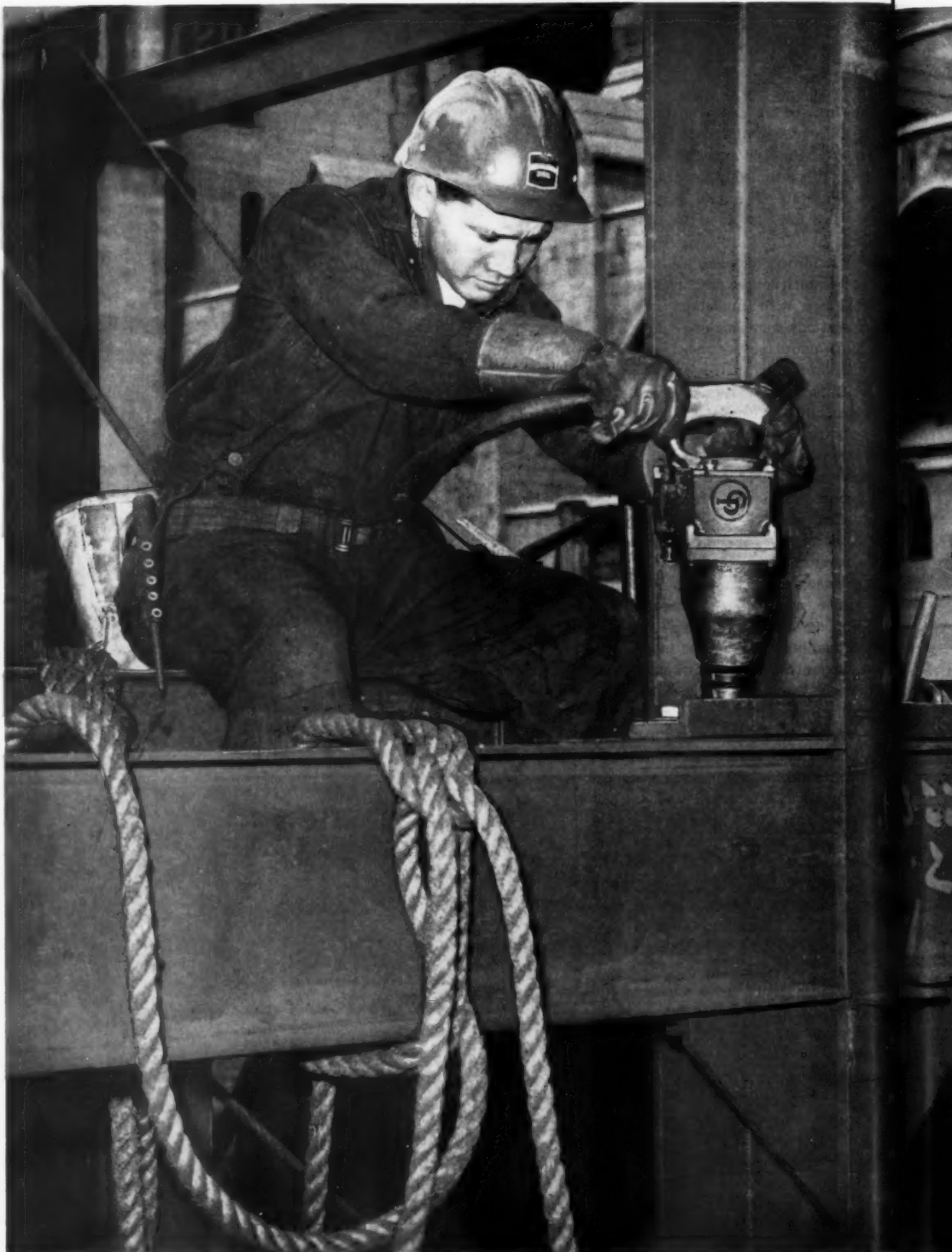
As soon as the excavations had been made, the unfrozen earth at the bottom was covered with a thick layer of straw to prevent it from freezing until the concrete could be placed. The areas outside the structures were

backfilled with unfrozen sand and gravel, which was compacted by a Jay vibrating tamper.

A Caterpillar No. 12 motor grader was assigned to the maintenance of roads in the plant area during the winter. While there was some snow to plow, the road maintenance was relatively easy. The deep frost in the ground provided a stable base, supporting heavy loads in areas that usually would have been soft and spongy.

Sewer and water lines

Contracts for the first of the storm and sanitary sewer lines were awarded about November 1, to Carlisle Fraser, Inc. About this same time, Fraser was



CP-610 AIR WRENCH meets requirements for turn-of-the-nut method for proper tensioning of high strength bolts. It's 7 pounds lighter and 2 inches shorter than any tool of comparable rating, yet delivers up to 50% more torque output.



As workmen finish the concrete and erect the canvas shelter, a torch burning liquefied petroleum gas is inserted into a short length of corrugated metal pipe to provide heat inside the enclosure.



Heavy clothing and gloves do not seem to hamper crews building formwork through the winter. All men wear safety helmets with warm liners. Walls are being formed of $\frac{3}{4}$ -inch Plyform backed by 2x4 frames with double 2x4 wales.

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the successful bidder on a trunk sewer leading from the plant site to the city sewage treatment plant.

Anticipating the usual November freeze, Fraser pressed six rigs into service and used six pipe-laying crews on the two jobs. Day after day, the frost held off as the crews rushed the work to completion. When the temperatures did drop below freezing, a helpful cover of sod on much of the area limited the frost penetration. A big LeTourneau ripper intended for frost breaking stood idle as the crews laid some 3,000 feet of storm sewer in sizes ranging from 10 to 48 inches and 6,000 feet of 8 to 12-inch sanitary sewer before frost became a pressing problem.

During the winter, additional storm sewers and perforated metal underdrains were installed. Before these trenches were started, the surface of the ground was thoroughly ripped by a LeTourneau ripper pulled by one or two Caterpillar D8 tractors. In several passes, these rippers, using a single tooth, broke up an area 8 to 10 feet wide to permit trenches with safely sloping sides to be dug.

Much of the trenching was done by a pair of Lorain TL-25A hoes. These rigs were able to dig through a frost nearly 2 feet deep without the aid of a ripper. When the frost was deeper, the ripper made several passes to break up the surface so that the hoe was able to penetrate through the remainder. At times the frozen ground measured as much as 4 feet deep.

In areas close to buildings or near other utilities, it was not always possible to use the rippers. Some of the trench in these areas was cut by workmen using air spades powered by a Gardner-Denver 110-cfm compressor.

Only those outside utilities that were really necessary were installed during the winter. When the ground thawed this spring, the contractor began another major utilities contract which included domestic water supply lines, fire lines, perforated metal subdrains, and storm and sanitary sewers. This contract required the placing of more than 38,000 linear feet of the several types of pipe.

Concrete construction

Five of the manufacturing and ad-

ministrative wings of the plant are supported on Raymond concrete piles, as are the powerhouse and water tower. The remainder of the structures are on spread concrete footings. The piling was driven last fall when frost was not yet a problem.

Trenches for the footing walls were excavated with the aid of rippers, and the walls were formed with 3/4-inch Plyform backed by 2x4 frames and double 2x4 wales and tied with Dayton snap ties. Workmen seemed to have little trouble in building and setting these forms, even though the weather was quite cold. Their heavy clothing and gloves probably did not prevent their accomplishing as much as they would on a hot day.

Ready-mix concrete, furnished by Rochester Ready Mix Concrete Co. and Pullerton Lumber Co., both of Rochester, was delivered to the forms at 70 degrees F in transit mixers. Where possible, the mix was chuted directly into the forms. In other cases it was placed by a crane using a Gar-Bro 1-yard laydown bucket. Maginniss Hi-Lectric vibrators consolidated the mix.

As soon as the concrete had been placed, the forms were covered with enclosures made of boards and canvas, and heating torches were installed. The most commonly used heaters consisted of a propane-burning torch, manufactured by International Manufacturing Co., Littleton, Colo., which was inserted in a short length of corrugated metal pipe.

The pipes were used, 10-inch corrugated metal culvert pipes 12 to 14 feet long, or waste pieces of corrugated metal pile shells. Each of the torches was connected to a battery of from 2 to 12 propane cylinders, each with a capacity of 100 pounds of the liquefied gas. As a safety measure, the gas cylinders were always placed outside of the enclosures on platforms with guard rails.

Many hundreds of these cylinders of propane, supplied by Home Gas Co., Worthington, Minn., were used on the job during the winter. To make handling as convenient as possible, a large loading dock was built up to truck-bed height in an open area on the site. Here big truck-trailers delivered the full tanks and picked up empties. Here, also, the job service trucks loaded and unloaded their tanks without lifting.

These torches and pipes very effectively heated most of the concrete. In a few cases where large areas were enclosed by canvas, and in partially completed buildings, oil-burning Chinnook heaters were used.

Steel erection

Erection of the structural steel building frames began in midwinter, as soon as the steel could be delivered, and when a substantial number of footings were complete. The steel was fabricated by the St. Paul Foundry & Mfg. Co., St. Paul, Minn., and erected by Industrial Construction Co., Minneapolis, Minn.

Industrial used a pair of Bay City motor cranes to unload and erect the steel. Both of these machines were equipped with 70-foot booms and 15-foot jibs for this work.

Here again, there may have been a slight slowdown because of the heavy clothing worn by the workmen and because of the increased danger of working in snow and ice. However, there was good footing for the cranes wherever they went, permitting them to operate with ease in areas where planks or mats would have been needed in the spring or during wet weather.

By working through the winter, the contractor had all of the building foundations completed by April 1 and all the structural steel in place by May 15. There was nothing to stop the various tradesmen from going right ahead with their respective parts of the work as fast as possible. Only in this way was there any hope of having the buildings ready for oc-

cupancy by early 1958.

The single 8-hour shift on the winter work started at 8 in the morning, took a half hour at noon, and was through at 4:30 in the afternoon. The contractor provided heated buildings on the site where the men could leave their lunch buckets and eat their lunches. These buildings also served as places to dry out wet clothing or to hang extra heavy clothing whenever it was not needed.

The safety helmets supplied to all workmen were equipped with warm liners for the winter work.

Personnel

Supervising the project for Johnson, Drake & Piper, Inc., is project manager Leonard O. Clark. Assisting him are Eric Mattson as general su-

perintendent, George G. Larson in charge of concrete and forms, and Robert F. Nelson, project engineer. Representing the architects on the project is Kenneth Haynes. The plant engineer for IBM is Robert Morris.

THE END

Williams Bucket appoints

Edgar W. Percy has been made assistant sales manager of Williams Bucket Division, McDowell Co., Inc., Cleveland, Ohio. A member of the firm since 1955, Percy had served with the Corps of Engineers during World War II on the atomic energy projects, heading up procurement of materials for the Los Alamos laboratory and the University of Chicago.

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"We'll need extra copies for the meeting." Now everyone at a meeting can have copies of important material. If necessary, additional copies can be made right in the meeting room without disturbing anyone.



Building of insulated panels withstands winter at mountaintop transmitting station

A building strong enough to withstand winds recorded at one-third the speed of sound, and livable in temperatures 50 degrees below zero was the requirement of WMTW-TV, which needed the building as a television transmitter studio and tower atop Mt. Washington in New Hampshire.

The requirement was met by Keller Products, Inc., working with its affil-

The transmitting station on Mt. Washington in New Hampshire goes up quickly. Panels are bolted directly to the foundation, steel frame, and to each other through flanges. This anchors the building against winds and storms.

ate, Plywood Wholesale Co., Inc., Manchester, N. H. These firms came up with a building of panel construction. These consisted of fir plywood stressed-skin sandwich panels, insulated and cushioned against maximum impact, and bolted to a steel frame and permanent concrete piers.

The most complex of these panels are those for the roof. The outermost layer is faced with heavy tar and gravel, underlaid with five layers of felt. Below this is a cushion sandwich panel of 1/2-inch fir plywood with an inner core of 1 1/2-inch end-grain balsa wood. The roof panel proper, which also forms the ceiling, is a plywood sandwich panel with an inner grid core construction. Air spaces in the core contain Fiberglas insulation. These panels measure 18 feet 4 1/2 inches in length.

Wall panels, 11 inches long, are similar in construction to the roof panel proper. Floor panels, though similar, were designed to handle a 60 pound per square foot loading in most of the building, and a load of 100 pounds per square foot where heavy equipment is installed.

Transportation up the treacherous 8-mile Mt. Washington road was an engineering feat in itself. Traller trucks 47 feet in length hauled the building panels up average grades of 12 degrees. The trip up the mountain—at a maximum speed of 4 mph—took two hours.

The steel transmitter tower, which sends out telecasts to Maine, New Hampshire, parts of Vermont, Massachusetts, and the province of Quebec, Canada, is equipped with an electric de-icing unit so powerful that it could literally melt the tower if it was turned on and no ice was present on the tower.

Center-line barriers cut down on head-on accidents

Within the past three years, the New Jersey State Highway Department has concentrated on center-line barriers as a means of eliminating head-on collisions on many undivided and overburdened routes. A total of 28 miles of barriers has been erected to date with the program continuing at fast pace.

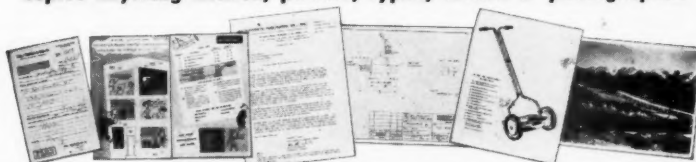
Several types of barriers were experimentally installed, but the most commonly used is a solid concrete one, with a 30-inch-wide base. The barrier extends 20 inches above the pavement.

On Route 4 in Englewood, where 48 to 50 thousand cars a day use the highway, there were 6 fatalities in the 33-month period preceding erection of the barrier. All were due to cars crossing the center line. There has been one such fatality since April, 1955, completion date of the barrier construction.

In Hillside, where 59,000 cars a day use Route U. S. 22, a total of 11 persons had died in the 3-year period before erection of the barriers in 1954. There have been no head-on collisions since then.

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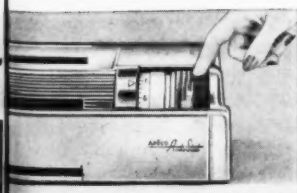
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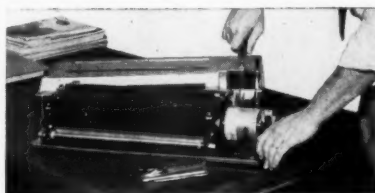
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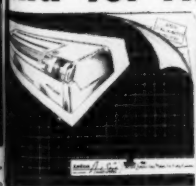
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Third winter season on dam to finish outlet works job

Bulk of earthwork for Tuttle Creek Dam completed during first winter; concrete work on tunnel transition sections continues in second winter



This C. S. Johnson automatic plant supplies the 60,000 yards of concrete for the outlet works. The aggregate bins, fed by the Barber-Greene inclined conveyor, have a 200-ton capacity. The cement bin holds 200 barrels, and a separate silo, 1,200 barrels. Mixing is done by two Koehring 2-yard tilt mixers on the lower deck.



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Two mild Kansas winters made it possible for a contractor to keep on working and stick to the schedule for the Stage II outlet works contract on Tuttle Creek Dam on the Big Blue River near Manhattan, Kansas. The first winter, Tecon Corp., Dallas, Texas, completed earthwork operations. The second winter, housings and heat were supplied to make it possible for concrete work to be done on the tunnel transition sections. As a result of Tecon's good showing on this job, the important unit in the Kansas River Basin flood control system, started in 1952, is aiming straight for completion in 1961.

Taking advantage of reasonably mild winter weather in Kansas, Tecon Corp., Dallas, Texas, continued earthwork and concrete construction through two winters to keep its Stage II outlet works contract on schedule at Tuttle Creek Dam.

The dam, an earth and rock fill structure across the Big Blue River about six miles north of Manhattan, Kansas, is being built by the Kansas City District of the U. S. Army Corps of Engineers as a key unit in the Kansas River Basin flood control system. The \$90 million project was started in 1952 and is scheduled for completion in 1961.

The outlet works, for which Tecon Corp. is the general contractor, is covered by a \$3.67 million contract scheduled for completion this December. It calls for an approach channel, a gated intake tower and operating house, upstream and downstream conduit transitions, a stilling basin, and the outlet channel. A state highway had to be realigned to permit work on the outlet structures, and this reconstruction job was also included in the contract.

Work through two winters

Starting work late in the fall of 1955, the contractor carried earthwork operations on through that winter and completed most of the earthmoving by the end of the 1956 season.

CONTRACTORS AND ENGINEERS

Winter work

Aggregates are transferred from rail cars to stockpiles over the reclaiming tunnel by a Bucyrus-Erie 38-B with Owen 2-yard rehandling clamshell. The reclaimed aggregates travel up the inclined conveyor to the plant, background.



The intake tower and operating house were substantially completed during the 1956 season, but concrete construction was continued through last winter on the tunnel transition sections. The transition areas were housed in and heated to permit the work to continue even during freezing weather. Master 200,000-Btu oil-burning heaters provided the heat inside the frame-and-canvas enclosures.

A big C. S. Johnson automatic concrete plant produced all of the concrete for the structures, including the heated concrete needed for cold-weather operations.

Four sizes of coarse aggregate, ranging from 6 to 3/4-inch, were received at the plant by rail from Thompson-Strauss Quarries, Inc., Kansas City, Kans., and Loring Quarries, Bonner Springs, Kans. A Bucyrus-Erie 38-B and another crane used Owen 2-yard clamshell buckets to transfer the materials to storage stockpiles over a reclaiming tunnel. Thirty carloads of each size of material could be stored in the roomy stockpiles. All of the material fed by gravity to the gates of the reclaiming tunnel.

Inside the Armco 108-inch-diameter Multi-Plate tunnel, a 217-foot-long, 24-inch Barber-Greene conveyor carried the aggregates to an inclined conveyor at the mouth of the tunnel. Hand-operated gates inside the tunnel regulated the flow of materials from the stockpiles to the belt.

A 300-foot-long, 24-inch Barber-Greene inclined conveyor raised the aggregates to the distributor at the top of the plant. From here, they flowed by gravity to the five bins of the plant, which had a combined capacity of 200 tons.

Type II Universal-Atlas cement was delivered by rail from the mill at Independence, Kans. A 1,200-barrel silo provided storage for the cement in excess of the 200-barrel capacity of the plant's cement compartment.

Semi-automatic batching equipment proportioned the materials and delivered them to the two Koehring 2-yard tilt mixers on the lower platform of the plant tower. The mixers discharged into an 8-yard surge hopper. Ford F7 trucks, each carrying one Johnson 2-yard concrete bucket, shuttled the mix from the plant to

(Continued on next page)

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The long boom of the Bucyrus-Erie 54-B crane reaches out to place concrete in a pier form for the intake structure. Heated concrete is supplied for the pours, making it possible for this work to continue through the colder months.



Mild December weather helps Tecon Corp. stay on schedule with earth excavation in the approach channel of the outlet works. Both the Allis-Chalmers HD-20 and the Euclid scraper it push-loads are protected by winter housings.

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(Continued from preceding page)

the point of placement.

Most of the concrete was placed during the night shift. A Bucyrus-Erie 54-B and a Lima 802 crane handled the buckets on most of the pours with the 38-B helping out when necessary.

The mass concrete, using 6-inch aggregate, had a cement factor of four. For thinner sections, a smaller maximum-size aggregate was used, and the cement factor was increased. Carter-Waters Adair admixture was used in all of the concrete.

Although many special types of forms were required, the usual straight form panels were made up of 2-inch tongue-and-groove sheeting backed by 3x6 studs at 2-foot centers and double 3x6 wales. The forms were tied with Universal Spiroloc ties. The forms, prefabricated in a carpenter shop and form yard, were set by crane.

All of the construction joints in the conduit and in the intake tower were sealed by the installation of Gates triple-bulb rubber waterstop.

Shovels, scrapers move dirt

Three draglines and shovels joined with six Euclid scrapers to move the 1.2 million cubic yards of excavation from the intake and outlet channels. A Bucyrus-Erie 54-B and another crane equipped with Hendrix 4-yard buckets loaded a fleet of nine Euclid 21-yard bottom-dumps. Much of the rock excavation was handled by a shovel.

A spread of Euclid scrapers with a Euclid TC-12 push-tractor worked on the channel excavation as well as the highway relocation. This earthmoving spread also included two Allis-Chalmers HD-21 tractors, two HD-20 tractors and five Caterpillar D8 tractors, together with the usual dozers and rollers.

The two conduits which will carry the water through the dam from the intake structure to the stilling basin were constructed under the Stage I outlet works contract. This work was done in 1952 by George Bennett Construction Co., Kansas City.

With the completion of the Stage II contract for the outlet works, which is scheduled for December, the project will be ready for closure of the river channel and diversion of

CONTRACTORS AND ENGINEERS

the flow through the outlet works.

Personnel

The project manager for Tecon Corp. on this project is John J. O'Hearn. The job superintendent is Jim Upton and the project engineer is Charles V. Kopf, Jr. The office manager is E. L. Sappington.

Representing the Kansas City District of the Corps of Engineers are resident engineer B. V. Reany and office engineer Harry Dennis, with Robert Griffith supervising the structural work.

THE END

Book discusses soil and water engineering

"Elementary Soil and Water Engineering", by Glenn O. Schwab, Richard K. Frevert, Kenneth K. Barnes, and Talcott W. Edminster, is available for \$6.25 from John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. The book is prepared for the reader with no previous training in engineering.

It emphasizes the engineering phases of soil and water conservation, but also considers agronomic, economic, and other aspects of these problems. Information is given on surveying and its application to farm problems, and also on the design and layout of conservation practices. Some of the chapters deal with soil erosion, waterway construction, surface drainage, land clearing, and watercourses. A list of references and problems conclude each chapter. Diagrams, charts, tables, and graphs supplement the written text.

Crawler, tractor data topic of new book

A new book in the Frazee-Bedell series of automotive books, "Tractors and Crawlers", by Irving Frazee and Philip V. Eshelman, meets the need for a comprehensive training plan to provide a broad knowledge of principles necessary to the selection, maintenance, and repair of the modern tractor and crawler.

The book covers design and construction features. Chapters contain information on suspensions and steering, engines and accessories, power trains, brakes, and hydraulic systems of every major type of tractor and crawler now in use. A list of questions appears at the end of each chapter. Pictures and diagrams supplement the written material.

The \$7.50 book may be purchased from the publisher, American Technical Society, 848 E. 58th St., Chicago 37, Ill.

Division manager for Intrusion-Prepakt

The newly created position of manager of the piling division of Intrusion-Prepakt, Inc., has been filled by Norman L. Liver. Previous to this, he was Atlanta regional manager for the Cleveland, Ohio, contracting firm.

Liver, a civil engineering graduate of Alabama Polytechnic Institute, holds membership in the American Society of Civil Engineers.

Vice president Richard Nixon presents the O'Farrell Highway Award to James P. Coree, Freetown, Colony of Sierra Leone, West Africa, while Robert O. Swain, executive director of the International Road Federation stands by. Coree was outstanding among 33 graduate students studying highway engineering in three U. S. universities on IRF scholarships. The annual award is named in honor of Romulo O'Farrell, president of the Mexican Highway Association and IRF man of the year in 1951.



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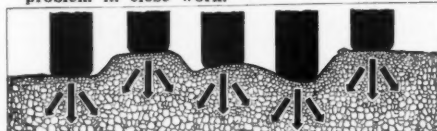
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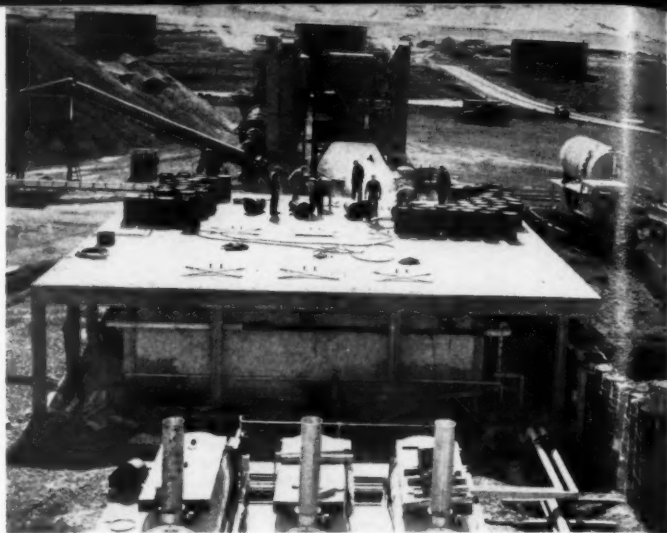
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Cold-weather technique removes asphalt from drums in less than one minute



A fork-lift truck uses a clamp and chain to pick 55-gallon drums of asphalt from a flat-bed trailer truck and stockpile them on the cutting platform.



The cutting platform itself is a reinforced-concrete deck above the 20,000-gallon asphalt melting tank. The six rectangular openings, through which asphalt plugs drop, are covered by timber sheeting.

An efficient method of removing solidified asphalt from 55-gallon metal drums, developed during construction of Thule Air Force Base in Greenland, is useful when large quantities of asphalt are needed and can be shipped to a job only in metal drums.

At Thule, asphalt arrived in 55-gallon drums and was transported by flat-bed trailer trucks to the various asphalt plants supplying paving material. A fork-lift truck unloaded the flat-beds and stockpiled the drums on the plant cutting platform. Each asphalt drum was gripped just below its rim by a three-pronged clamp so that it could be raised to the cutting area by a hoist mounted on an overhead crane rail.

The cutting platform was a reinforced-concrete deck, with six rectangular openings, built above the 20,000-gallon asphalt melting tank.

The tops of the drums were removed

with a small Ingersoll-Rand air hammer and a 5/8-inch masonry star drill. The drum casing was first punctured just below the top rim, and one edge of the star drill was used to extend the cut around the entire circumference of the drum. Two teeth of the star drill acted as flanges, preventing the cutting edge from breaking through the drum and into the asphalt. When necessary, this cut-away top was removed from the drum by a blow with a sledge hammer. A vent was made in the solid end of the drum to prevent an air lock.

Asphalt removed

The drum was then transported by the overhead hoist and three-pronged clamp to one of the tank-charging ports of the platform. Here it was lowered over the port, open end down, and supported by four hooks that en-

(Continued on page 60—
see also facing page)

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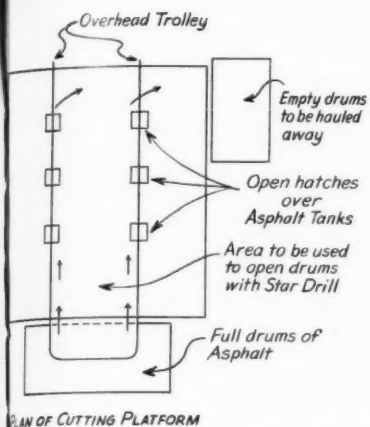
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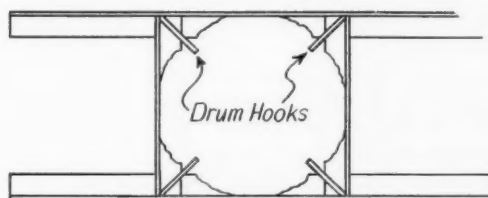


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CONTRACTORS AND ENGINEERS



A top-view sketch of the cutting platform shows the rectangular deck openings, the overhead hoist arrangement, and receiving and unloading docks.

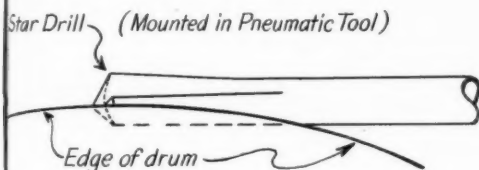


TOP VIEW OF STEEL FRAME DRUM CRADLE

The steel frame that is used to span the tank port and hold the barrel has four steel hooks that support the skin of the drum but do not hamper removal of the asphalt plug.

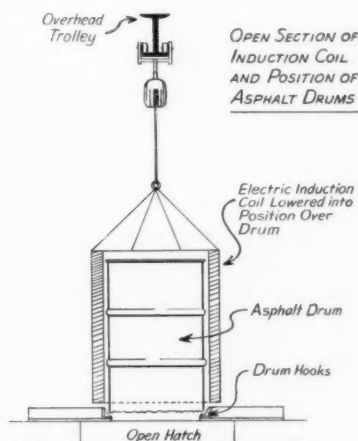


Getting solidified asphalt out of 55-gallon metal drums would have been quite a job during construction of Thule Air Force Base in Greenland, but for the method of melting the asphalt slightly so that the entire plug fell free of a drum. The time needed to free a plug: less than one minute.



DETAIL OF "STAR DRILL METHOD" OF OPENING ASPHALT DRUMS

One edge of a 3/8-inch masonry star drill is used to cut just below the top rim of a drum.



An induction coil is set in place over an asphalt drum. It is supported by the steel frame and the hooks over the port in the deck. With current on, the asphalt plug begins to melt and drops into the tank below.



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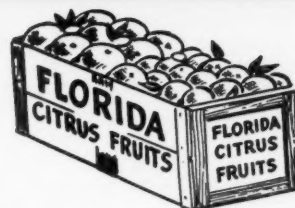
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(Continued from page 58)

gaged the cut edge of the drum. These steel hooks, welded to a steel frame that spanned the tank port, supported the skin of the drum but did not restrict removal of the solid asphalt plug inside.

An induction coil, also supported by the overhead rail, was then lowered over the inverted drum, and current was supplied to melt the asphalt plug free from the drum. This allowed the plug to drop through the port and into the melting tank below. The empty drum was dropped into a truck at the edge of the cutting platform.

Induction coil

A 24½-inch-diameter coil, 33 inches high, was formed around an asphalt drum. The pre-insulated, 7-strand copper-weld iron wire was wound around the drum, which served as a form. The coil was designed to have a 1-inch clearance when placed over the asphalt drum to be emptied. Over 870 feet of iron wire was used to form the coil.

Before it was wound, the wire was insulated with a cover of Johns-Manville asbestos cement and baked in an electric oven. The formed coil was insulated on the outside with a coating of asbestos cement and a wrapping of asbestos cloth.

A 50-kw generator supplied electric current to the coil, which was tapped in three equal sections. Operational voltage was 120/208, developing 175 amps, and employing a star connection. This was later modified by using a delta connection from a 75-kw generator which developed 360 amps at the same 120/208 voltage.

When the current was turned on, the coil produced a uniform high "skin" temperature around the drum to free the asphalt plug in less than one minute. Almost no waste resulted, since the melting of the asphalt plug started from the drum surface inward.

Personnel

Steve Molner, of the North Atlantic Constructors—the joint-venture combine on the project—was responsible for the design and fabrication of the induction coil. Metcalf & Eddy and Alfred Hopkins & Associates were the architects and engineers for the Eastern Ocean District, U. S. Army Corps of Engineers, the construction agency for the Air Force in Thule. THE END

Keystone state to open last link in turnpike

A 15½-mile section of the north-eastern extension of the Pennsylvania Turnpike will be opened to traffic November 1, according to plans announced by the Turnpike Commission. The new section extends from the Wyoming Valley Interchange northward to the Scranton Interchange, where it connects to U. S. 6 and 11.

Turnpike authorities said the opening of this section, originally scheduled for September 15, was delayed six weeks by the recent cement strike. The new section marks the final link in the 469-mile-long turnpike.

BPR issues summary of highway statistics

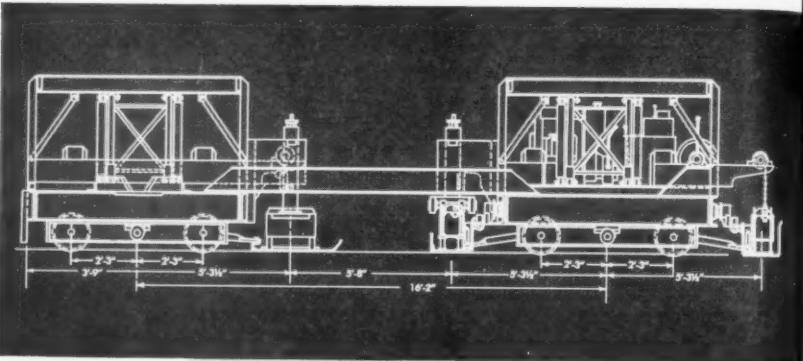
"Highway Statistics, Summary to 1955", which gives a general historical summary of information dealing with highways, their use, and financing, has been issued by the Bureau of Public Roads. The bulletin contains a comprehensive review of highway development in the United States through 1955. The 150-page book abounds in graphs supplementing written text on motor fuel, motor vehicles, highway finance, mileage of public roads and streets, and federal aid.

The \$1 book can be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.



DEEP PENETRATION IN HARD SOIL—sometimes a problem in winter—is achieved by this Sherman-Gannon Earthcavator, manufactured by Sherman Products, Inc., Royal Oak, Mich. The roll-over design of this unit permits the tractor operator to change the unit for scarifying, leveling, scraping, and backfilling without leaving the tractor seat.

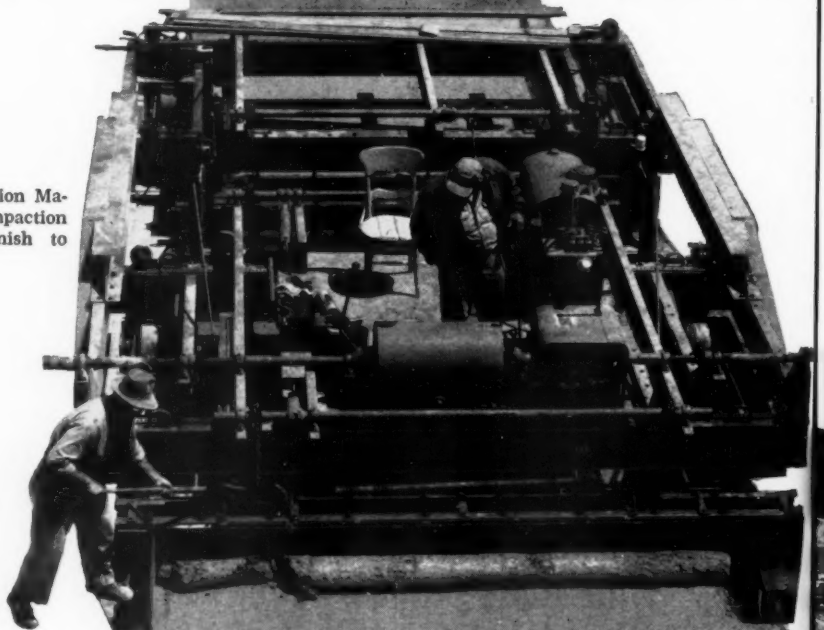
Two Detroit Special finishing machine frames engineered into one rugged unit combining finisher and float operation. Equipped with quick crown change screeds. Supplied in either 12' to 18' or 20' to 25' working widths. Hydraulically controlled pneumatic tired transportation assemblies optional.



FLEX-PLANE

First Again
with Faster — Finer — Finishing Combination

"FLEX-PLANE" Combination Machine gives greater compaction and applies superior finish to Connecticut Turnpike.



WORLD'S LARGEST BUILDER OF CONCRETE FINISHING EQUIPMENT



An erection crew makes quick work of assembling one of the 20x48-foot Arctic shelters slated for use as barracks and communications centers by the army. Buildings are of 3-inch-thick stressed-covered panels with fir plywood surfaces glued to the wood edge bonding and interior frame.

Arctic shelter of fir plywood adopted for use by U. S. Army

A building capable of withstanding winds of 100 mph and snow loads of 75 pounds per square foot has been adapted by the U. S. Army for use as barracks and communications centers, following successful tests at Fort Churchill, Canada, and Big Delta, Alaska.

Developed by the U. S. Army Corps of Engineers' Research and Development Laboratories at Fort Belvoir, Va., the building consists of 3-inch-thick stressed-covered panels with fir plywood surfaces glued to the wood edge bonding and interior framing. The void between these members is

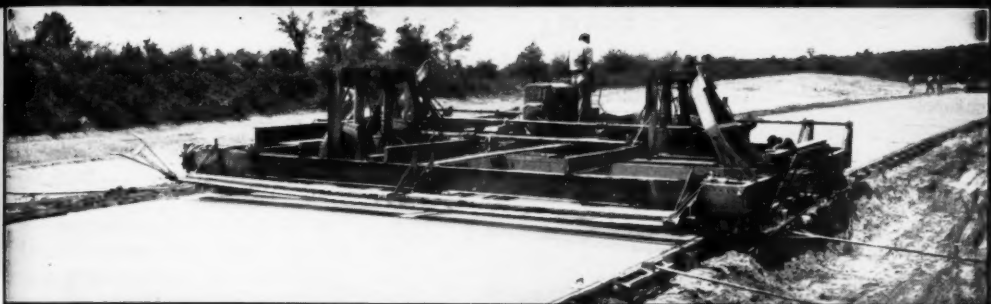
filled with a lining of aluminum foil on Kraft paper on the inner face, and this lining extends up the sides of the framing to form a cup. This cup is filled with Fiberglas insulation. The roof consists of skin-stressed fir plywood beams, supported on the bearing walls.

A single fastener, a wedge clip, connects all the panels together. Tongue-and-groove joints are used throughout the panel envelope. The hardwood tongue, recessed in the groove, makes a weathertight joint by compressing a gasket at the bottom of the groove.

Wall panels measure 4x8 feet and weigh 96 pounds. The floor panels are 4x10 feet and weigh 129 pounds. Aside from special roof panels for the corners, all other panels are identical and weigh 115 pounds each.

In tests at Fort Churchill, the 20x48-foot structure was erected in 65 man-hours by unskilled troops working in temperatures of 35 degrees below zero. A modified design of this building was used in the Antarctic expedition to set up bases for U. S. scientists during the International Geophysical Year.

U. S. ROUTE 16—near Farmington, Michigan. Loselle Construction's Combination increases daily finishing average



"... 4400 feet of 22-foot pavement finished in one day." ... "keeps up with three dual drum pavers." ... "450 lineal feet of 24' pavement per hour." These are typical reports from contractors using the revolutionary new Flex-Plane Combination Finisher-Floater Machine which does the combined jobs of transverse and longitudinal finishers. On the average, users finish over 3000 feet of pavement a day, requiring only two or three hand finishers depending on type of joints being used.

On-the-job checks show longitudinal surface smoothness to be unsurpassed by any other equipment regardless of condition of forms. Results prove it to be the fastest, most efficient finishing machine in use today.

But why not get all the facts? Write today for your copy of the data-packed "Flex-Plane Finisher-Floater Machine" brochure. See for yourself why contractors consider it the finest machine of its type in the world.

U. S. ROUTE 30—J. A. Jones Construction Company uses combination machine on straightaway paving—Flexplane self-widener on interchanges near Mansfield, Ohio.



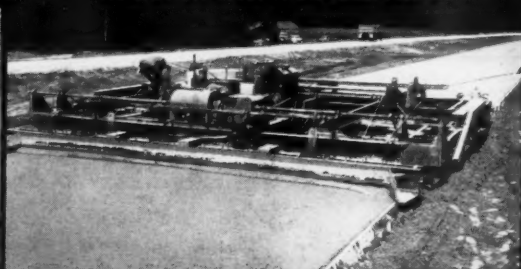
CONNECTICUT TURNPIKE—DeLillo Construction Company's Combination cuts hand finishing to a minimum.



U. S. ROUTE 12—Kalamazoo, Mich., bypass is worked by Carl Goodwin & Sons. Contractors generally report substantial savings over previous finishing methods.



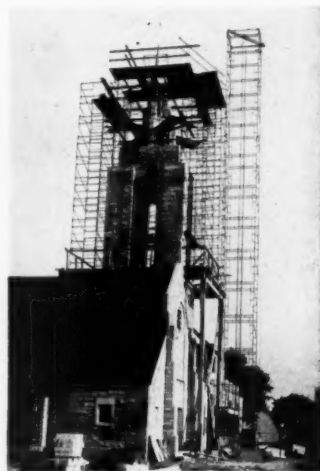
U. S. ROUTE 23—Combination Machine owned by Denton Construction Company keeps up with three dual drum pavers south of Brighton, Michigan.



THE FLEXIBLE ROAD JOINT MACHINE COMPANY

531 THOMAS RD., WARREN, OHIO

For more facts, use Request Card at page 18 and circle No. 251



Construction firm makes scaffolding do triple duty

Triple service was received from Bil-Jax tubular steel scaffolding by Behrman Construction Co., Ridgeville Corners, Ohio, during the building of St. Johns Evangelical Reformed Church at Archbold, Ohio. The 85-foot material-hoisting tower was used not only to lift masonry materials to the working platform, but also to hoist three large bells—each weighing over 1,300 pounds—to the belfry.

A minimum of steel scaffolding was required on this job, since the upper portions of the hoisting tower could be used as scaffolding in constructing the main portion of the building before the full height of the tower was needed for work on the steeple.

Spanish authorities are mobilizing their forces to cope with the traffic situation. Hornblowing has been stopped; and 10 French policemen were brought to Madrid to train Spanish police in handling traffic problems.

Earthmoving equipment operators and owners:



Tips for sub-zero operation

Earthmoving in winter is getting to be more and more common, but efficient winter earthwork depends on the proper care and operation of equipment, and this means that a few extra precautions will have to be taken if work is planned for the months ahead. Emphasis here is given to the vital points stressed by manufacturers of earthmoving equipment—the men who know the equipment best.

Symons Forms Ganged for Anchor Walls



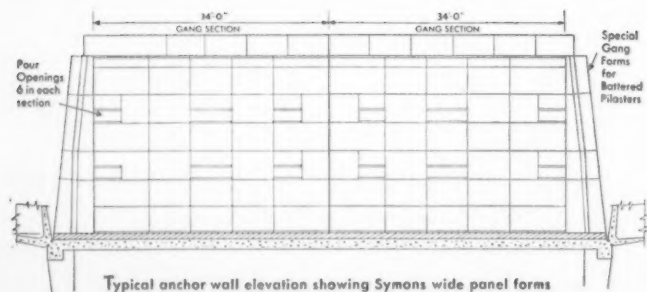
ASSEMBLY COST ONLY 5¢ A SQ. FT.

Modern forming methods answer the need of the jet age on the new TWA hangar at New York's International Airport. Symons 4 x 6 and 4 x 8 foot panels ganged in units 34 feet wide by 27½ feet high were used for forming the 28 anchorage walls which straddle the full 80 foot roof width of the main building.

By using this method of forming, the contractor, Grove, Shepherd, Wilson & Kruege, Inc., poured the hangar in place at the cost of a precast structure. Panels were assembled on the ground at a cost of only 5¢ a square foot. It took about 15 minutes for a crane to tilt a gang form off the slab and inch it into place on the roof. 15,000 square feet of Symons wide panel forms were used in this gang forming operation. Symons wide panel forms have steel struts and 2 x 4 cross members to strengthen the panel and minimize deflection during pouring. Tie holes in the steel struts allow insertion and removal of special ties. Any strength tie may be used, including Williams removable end ties. Individual panels are built in 6' and 8' lengths and 30", 36" and 48" widths.

Project Manager, A. R. Maxwell, working closely with the local Symons forming engineer, devised this fast, efficient method of forming. This type service is available to all contractors, as well as the preparation from your plans, complete form layouts, bill of materials and recommendations for the best and least costly method of forming—there's no charge or obligation.

Symons Forms Shores and Column Clamps may be rented with purchase option—rentals to apply on purchase price. For more information on Symons products and service send for our FREE catalog.



Typical anchor wall elevation showing Symons wide panel forms ganged into units 34 feet wide by 27½ feet high. There are a total of 28 cable anchor walls on roof of the main building.

For more facts, use Request Card at page 18 and circle No. 252

With winter closing in, all owners and operators of earthmoving equipment are looking for efficient ways to keep their machinery rolling in spite of snow, ice, and sub-zero weather.

Before draining and flushing cooling systems and using anti-freeze, check every part of the engine to be sure it is in good operating condition. Then the engine itself must be tuned up. Cooling systems should be drained and thoroughly flushed. The radiator, hose, gaskets, and connections should be checked for possible leaks and, most important, make sure thermostats are in top working order. All connections must be tight.

When filling a cooling system with anti-freeze, it is advisable to use a permanent type of anti-freeze with ethylene-glycol base. Alcohol or alcohol-base anti-freeze should not be used because the evaporation point is too low for high operating temperatures of 165 to 180 degrees. The anti-freeze solution should be tested at the end of each day to make sure that it is strong enough to protect against prevailing temperatures—a few gallons of anti-freeze are much cheaper than a broken engine block or radiator.

When putting anti-freeze in the engine, it is necessary to bring the engine up to operating temperature so that the anti-freeze mixes completely.

Oil, fuel changing

All oil must be drained from the engine crankcase, transmission and final drive, and gear boxes and rectifier pot; on motor graders the hydraulic system must be drained. These parts should be refilled with winter-weight oils and greases, as recommended in equipment manuals. On motor graders and related equipment, consult instruction books and decals on hydraulic fluid tanks for cold-weather instructions.

Summer fuel may be a little heavy for use in winter operation, so it is wise to have the pour point low enough to permit fuel to flow freely through the lines and filters at low temperatures. Fuel must be kept clean at all times and, in winter, operators must be doubly sure to keep water, ice, and snow out of fuel and

 **Symons**
SYMONS CLAMP & MFG. CO.
4251 Diversey Avenue Dept. K-7
Chicago 39, Illinois
Warehouses located in California, Kansas, Minnesota, Pennsylvania and Texas.
Sales offices and agents in principal cities.

CONTRACTORS AND ENGINEERS



After thorough cleaning and oiling of the Model B Tournapull Fullpak scraper bowl and the blade of the rubber-tire dozer, background, both operators have no trouble working this frozen earth.



With anti-freeze in the engine and cooling systems, and batteries well charged, the Model C Tournapull rear dump, right, and Model C Tournatractor are able to turn out peak performance even in sub-zero weather.

tank. Dirty fuel must be strained.

To prevent fuel-tank condensation, the tank should be filled at the end of each day. A pint of denatured alcohol to each 50 gallons of fuel will keep condensation down and prevent fuel line and filter freeze-up.

Engine care

In winter, it is an absolute necessity to have a well charged battery. A low-charged battery will not turn over the engine for proper starting, and it will freeze more easily than one properly charged. If batteries are nearing the end of their effective use, it is advisable to replace them before winter starts. Battery charge should be checked more frequently in winter.

Water level should be checked often. Add the necessary water during working periods so that it will thoroughly mix with the battery electrolyte. Water added while the machine is idle may freeze and ruin the battery.

The engine should be warmed to operating temperature by idling at half-throttle for a few minutes. This will insure thorough circulation of oil. If the engine does not heat properly, check the cooling system thermostat.

If a diesel engine is hard to start in extremely cold weather, preheat the air taken into the cylinders. Some engines are equipped with preheating devices. For any temperature below 40 degrees above zero, cold-weather heating aids may be used. Starting aid kits are available through equipment distributors.

Scraper work

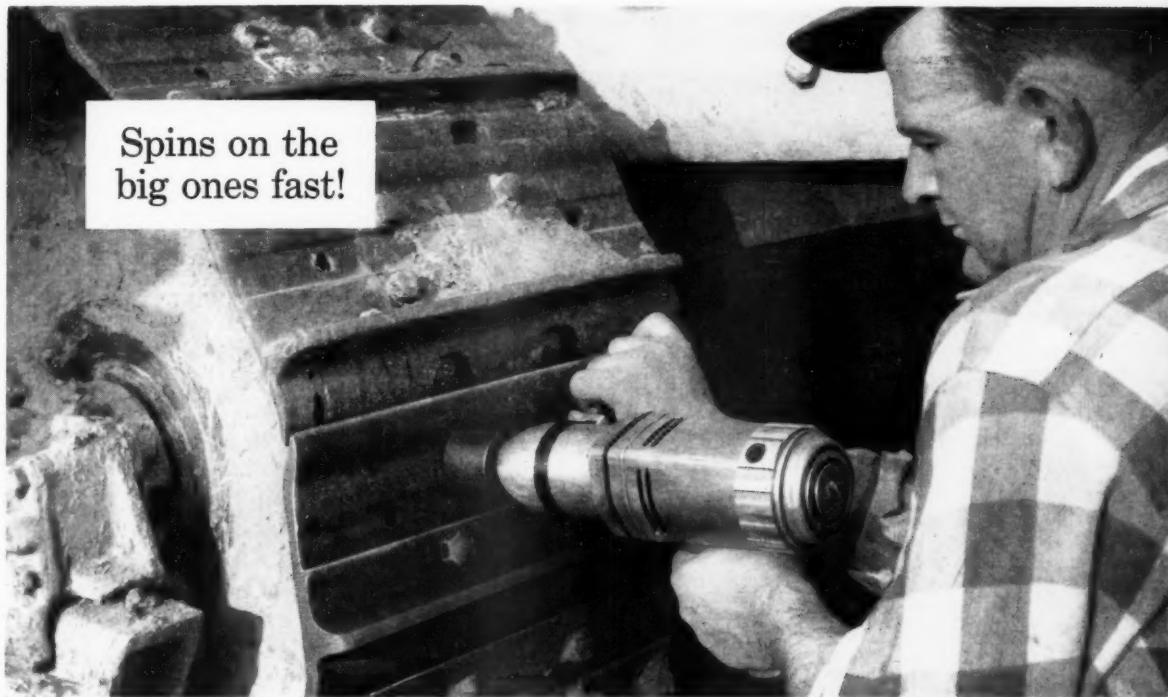
By breaking up frozen topsoil with a rooter or dozer, scrapers can load without interruption. When using a dozer for this purpose, dig in with one point of the blade until the frozen soil is broken through, then work the blade under the frozen surface and lift it out in large chunks.

If the load-carrying capacity of the tires will permit, air pressures can be slightly reduced when scrapers operate on rough, frozen ground. This will cushion shocks of running over frozen chunks, and lengthen tire life.

(Continued on next page)

For more facts, use coupon or circle No. 253—

Spins on the big ones fast!



New B&D 300 Impact Wrench slashes equipment down-time!



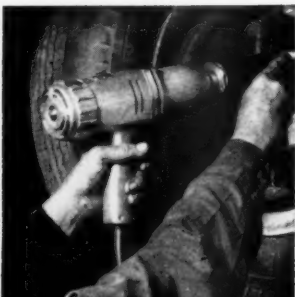
MORE POWER PER POUND: this lightweight (only 13 lbs.) tool really packs a powerful punch!



LONGER LIFE! Torture tests show it has higher performance, cooler running, longer life than competition.

EASIER HANDLING! Pistol grip positioned to eliminate nose or tail heaviness. No starting torque twist. All-position auxiliary handle.

No. 100 IMPACT WRENCH: the rugged wrench for smaller applications; hits maximum torque in just six seconds!



See for yourself! Mail coupon today for free demonstration.

A 3c stamp will bring you a demonstration of the tool that slashes tractor pad replacement time from hours to minutes—takes the back-break out of a tough job! Users report it's a cinch—just burn off the old head, punch the bolt through. Then, insert new bolt and run it up—fast—with the new B&D No. 300 Impact Wrench!

Packing a minimum of 300 ft. lbs. of torque and capable of handling bolts as large as 1 1/4" effortlessly, this new B&D power-built tool has thousands of uses. Use it for structural steel sub-assembly and final assembly; to remove heavy, dirt-encrusted truck lugs. Look about you. Chances are you'll find many uses for this tough, versatile tool! THE BLACK & DECKER MFG. CO., Dept. 1310, Towson 4, Md. (In Canada: Box 278, Brockville, Ont.)



Leading Distributors Everywhere Sell



Black & Decker®
Quality Electric Tools—Power-Built to set the pace

MAIL COUPON FOR FREE DEMONSTRATION

The Black & Decker Mfg. Co., Dept. 1310, Towson 4, Md.
☐ Please arrange a demonstration of your new No. 300 Impact Wrench.
☐ Send additional information.
Name.....Title.....
Company.....
Address.....
City.....Zone.....State.....

(Continued from preceding page)

Operators should avoid striking sharp chunks of frozen earth with the tires.

Before parking the machine for the night, remove all dirt and snow from the scraper bowls and dozer blades. To keep dirt from freezing onto scraper bowl or dozer blades, spray with a thin film of drain oil. This also applies to snowplows. When parking overnight or for any length of time, lower the scraper or dozer bowl onto planks to prevent the bottom edge from freezing to the ground.

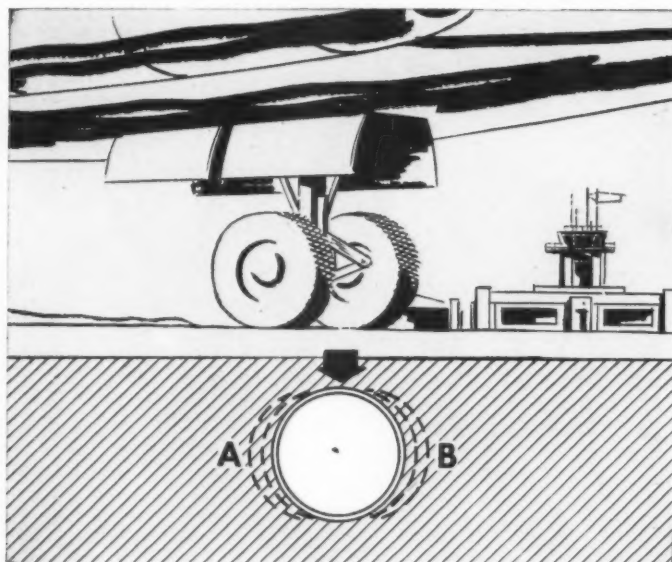
Covering the exhaust pipe of an idle machine will keep rain or snow from entering the pipe. Open pet cocks on air reservoir tanks to drain all accumulated moisture; but close the cocks and build up air pressure

before attempting to work the rig.

When an earthmoving machine is to be stored in the open and left idle for any length of time, always drain water from the radiator and air compressor, unless it is properly protected with anti-freeze. Cylinder-block drain plugs should also be removed. During this time, it is wise to tighten all loose nuts, cap screws, and other parts, and make necessary repairs. Machines should be painted at least once a year to prevent rust and prolong equipment life. **THE END**

Martin-Decker appoints

Jack W. Knowlton has been made sales manager of the Oiltool Division of Martin-Decker Corp., Long Beach, Calif.



▲ Airplane landing above a buried culvert illustrates the flexibility of the cross-section of a Beth-Cu-Loy pipe.

Showing approximate average pressures on both rigid and flexible test culverts under tracks of Illinois Central RR, Farina, Ill. (A.R.E.A. test).

N. J. highway department girds for snow and ice battle

New Jersey, like many other states, is again preparing for its annual battle with the winter elements. One of the principal reinforcements for the New Jersey State Highway Department, this winter, is a two-way radio communication system linking field supervisors with the department's headquarters in Trenton. The radio net will prove valuable in shifting snow-removal and ice-control equipment from sections just cleared to hard-pressed highways in other areas of the state.

Chemicals will increasingly replace sand, slag, and cinders in snow and ice control on highways. In conjunction with this, the department has

bought a large number of distributor units for spreading sodium chloride without abrasives. These detachable units will be mounted on tail gates of light and heavy-duty trucks already equipped with snowplows. These sodium chloride spreaders will constitute reinforcements in ice control, but the backbone will remain abrasives mixed with calcium chloride.

The department issued a few simple rules to prevent motorists from being trapped on highways and blocking department operations, and to keep adjacent residents from having their cars and driveways plowed in after heavy snowfalls.

If residents shovel snow on the right-hand side of the driveway and create a small pocket on the left side, a snowplow will be able to unload itself automatically in the pocket and not push the already shoveled snow back into the driveway opening. To minimize the plowing in of cars parked on highway shoulders in front of residences, the department urges owners to remove cars whenever there is the slightest possibility of a heavy snowfall. The car can be returned to its parking place after the plows have passed.

Car owners can avoid being trapped at the bottom of an icy or snow-covered hill by having a pair of strap-on emergency tire chains in the car trunk. Patience is the principal habit to acquire for driving on winter highways. Frequently a motorist, not content to stay behind a snowplow, pulls out and around to make his way unaided. He is usually found a mile or so up the road, completely immobilized and blocking the way of the plow until all hands can get him out of the way.

The department advises motorists to drive on winter highways as they walk, and assume all wet pavements are icy.

Corps studies excavating frozen ground in Arctic

The U. S. Army Corps of Engineers at Fort Belvoir, Va., is investigating the possibilities of excavating frozen ground in the Arctic. Construction machinery specialists at the Engineer Research and Development Laboratories have bored into a 4x4x7-foot block of frozen silt and sandy loam with a new truck-mounted earth auger developed by the H. B. Williams Mfg. Co., Dallas, Texas.

The block has been frozen in the fort's climatic test laboratory for four days in temperatures of 55 degrees below zero. During the tests, 18, 24, and 30-inch-diameter holes were drilled 4 feet deep. High-grade alloy cutting teeth, hard-faced with tungsten carbide, were used on the auger.

The auger, operating on the centrifugal force principle, ran into difficulties in discharging the spoil. Studies are now under way to develop a more suitable means of dispersing this material.

Why Beth-Cu-Loy's flexibility is so important in drainage pipe

When you look head-on at a drainage pipe made from galvanized corrugated Beth-Cu-Loy sheets, you might well marvel that those thin sidewalls can support the load! Yet it's that same thin-ness that gives a Beth-Cu-Loy culvert its outstanding characteristic: flexibility.

Let's see how big a difference flexibility can make. A culvert made from Beth-Cu-Loy sheets can, because of its flexibility, enlist the aid of the surrounding material to support imposed loads. Thus in the typical example shown at upper left, the load produces controlled deflection in the pipe. As points A and B move into and compact the trench walls, a load begins to develop around these points and tends to distribute the pressures peripherally.

Rigid pipe, on the other hand, cannot flex with the load and thus cannot transfer an appreciable portion of the load to the surrounding material. The bulk of the pressure is exerted through the vertical axis of the pipe.

This point is graphically portrayed by the diagrams at upper right. The figures used in the diagrams were obtained in an A.R.E.A. test conducted at Farina, Illinois, to determine the approximate average pressures on both flexible and rigid-type culverts. This test, like other research and experiments, demonstrates clearly that flexibility accounts in large part for the ability of corrugated metal pipe to carry the load.

Bethlehem does not fabricate culvert pipe. But we do manufacture galvanized Beth-Cu-Loy (copper-bearing steel) sheets, which fabricators make into pipe. If you would like further information about Beth-Cu-Loy, or the pipe made from it, just get in touch with the nearest Bethlehem sales office, or write to the address below.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL



For more facts, use Request Card at page 18 and circle No. 254

Air compressors keep waterways from freezing

The possibility that the multimillion-dollar St. Lawrence Seaway can be kept open for navigation even through the coldest winter freeze-ups has been suggested by Atlas Copco Eastern, Inc., Paterson, N. J. Officials at Atlas Copco said that the answer to ice-clogged northern ports and waterways has been found in Sweden and currently is being tested at the Slave Falls Dam, part of the hydroelectric system for Winnipeg, Canada.

Atlas Copco officials claim that compressor is being used to pump air through a 1½-inch pipe running about 14 feet below the water surface across the 1,200-foot dam. Air bubbles, released from the pipe at approximately 50-foot intervals, stream toward the surface, carrying along some of the warmer water from the bottom of the pool. This warmer water melts the surface, too.

Atlas Copco officials also claim that this same method can be adapted to the St. Lawrence Seaway.

ASTM book details thermal insulating materials

"ASTM Standards on Thermal Insulating Materials" compiles all the test methods and specifications developed by Committee C-16 of the American Society for Testing Materials. The book also includes 55 specifications, methods of sampling, recommended practices, and lists of definitions.

Chapters cover insulating cement, batt and blanket, felt, block and board, and pipe insulation. Formulas, diagrams, graphs, and tables supplement all written material.

The book may be purchased for \$3 for non-members and \$2.25 for members of the American Society for Testing Materials, 1916 Race St., Philadelphia, Pa.

Highway Dept. to use new truck beds during winter

To increase the efficiency and scope of anti-skid and improved traction operations during the winter, the Pennsylvania Department of Highways plans to buy 200 cinder-spreading beds for its four-wheel-drive trucks. The removable beds will be attached by turnbuckles to the original beds of the trucks. All controls will be operated by the driver in the cab.

The driver can vary the amount of cinders to suit changing conditions. The beds make for an even spread of cinders and eliminate chunks. The capacity of the spreaders is 7 cubic yards.

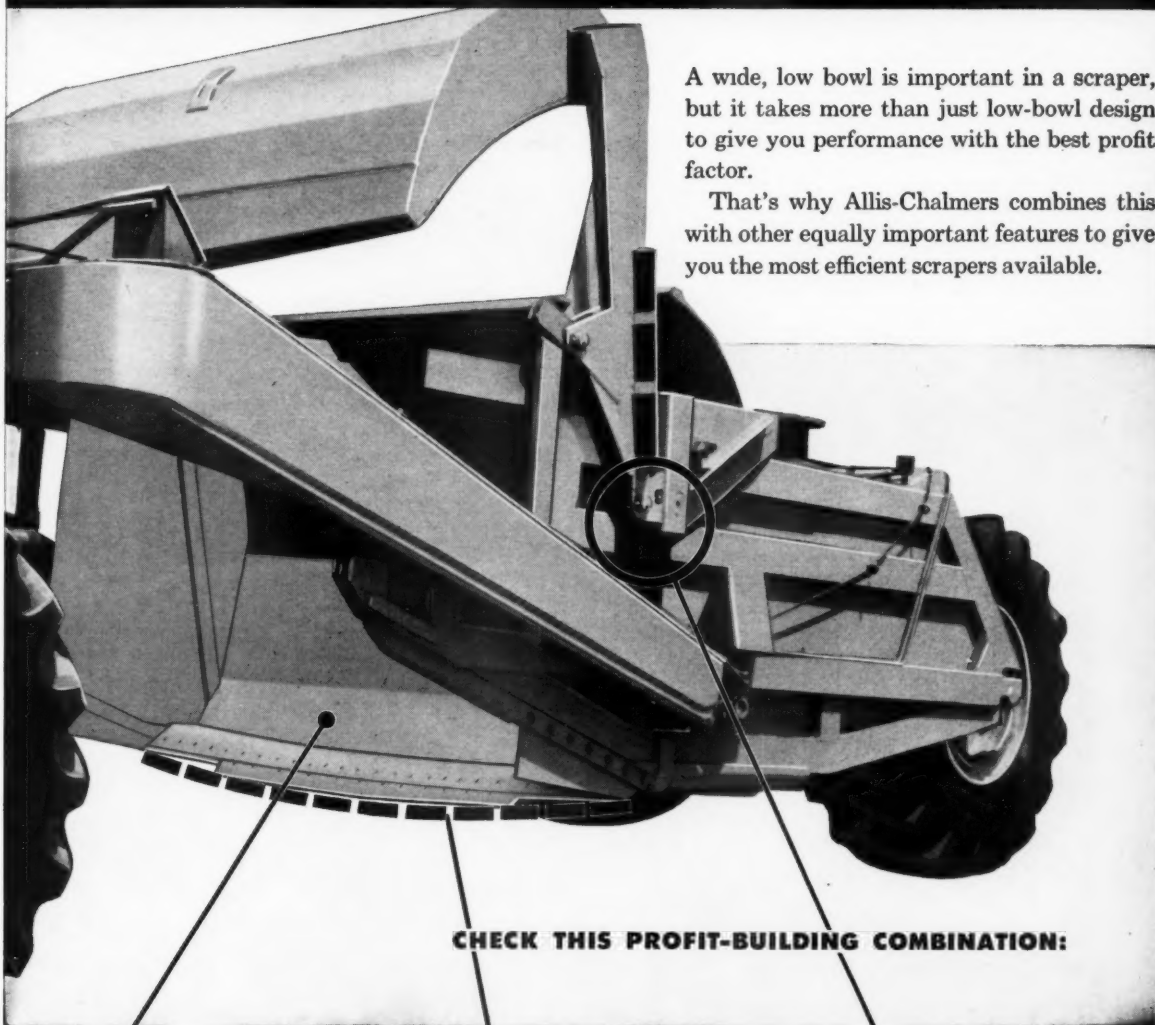
Diamond Iron Works news

David R. Freeberg has been appointed district sales manager for the Diamond Iron Works Division, Goodman Mfg. Co., Chicago, Ill. Freeberg will cover Ohio, Indiana, eastern Missouri, Illinois, Wisconsin, Michigan, and eastern Ontario, Canada, from his headquarters in Chicago.

DIGGING INTO FROZEN EARTH is the Big Muscle backhoe, product of the Ottawa Steel Division, L. A. Young Spring & Wire Co., Ottawa, Kans. The bucket teeth have sufficient penetration without exerting enough down pressure to lighten the outriggers. Another feature important to firms contemplating winter work is the ejector bucket, which automatically gets all wet sticky material out of the bucket during the dumping cycle, with no extra control necessary.



The Low-Down on Low-Bowl Scrapers



A wide, low bowl is important in a scraper, but it takes more than just low-bowl design to give you performance with the best profit factor.

That's why Allis-Chalmers combines this with other equally important features to give you the most efficient scrapers available.

CHECK THIS PROFIT-BUILDING COMBINATION:

1. Low, wide-bowl design for fast, heaped loading.

2. Curved bowl bottom and offset cutting edge for faster, easier penetration and live, boiling loads that fill every corner of bowl.

3. Patented apron-ejector linkage combines high apron lift with positive, forward forced ejection—permits either quick, complete dump or smooth, even spreading.

Your Allis-Chalmers dealer will be glad to discuss these and many other profitable advantages with you. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

Engineering in Action

For more facts, use Request Card at page 18 and circle No. 255



Earthwork crews lick new problems to push road onto Greenland Ice Cap

Three-mile road crosses dangerous melt area

at edge of cap; men battle problems of dust,

melt streams, frozen ground

by CAPT. RAY S. HANSEN, CE,
1st Engineer Arctic Task Force

Roebling
Royal Blue Wire Rope
will wear and wear
and wear!



This working quality means longer service life on your job. Add to this the fact that Royal Blue is stronger than the strongest rope you have been using and you have two excellent reasons why it has enjoyed faster acceptance than any wire rope in Roebling's history. Your distributor or Roebling Sales Office will give you the complete story, or contact John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

ROEBLING

Distributors, Branches and Warehouses Throughout the Country—Subsidiary of The Colorado Fuel and Iron Corporation

For more facts, use Request Card at page 18 and circle No. 256

No U. S. road job this winter will match the one done by the First Engineer Arctic Task Force on the Greenland Ice Cap. In building a 3-mile, heavy-duty road onto the cap as an experimental and research project, engineers used a subgrade of glacial ice that moves several feet every year. But crews learned two lessons in handling borrow-pit material in cold weather—lessons that can be profitable for earthwork and road contractors planning winter jobs. Ironically, low temperatures were not the big problem on this job; when temperatures rose two months of the year, the ice began to melt, creating streams that cut channels down the ice ramps, making it difficult for equipment to operate. The biggest menace was under-snow melt streams that weakened the snow surface used by heavy equipment.

New and challenging equipment and material problems were posed when the U. S. Army Corps of Engineers' First Engineer Arctic Task Force started construction of a long needed, heavy-duty road onto the Greenland Ice Cap.

Around the perimeter of the million-square-mile Ice Cap are several low-sloped ice ramps which can be used by track-type vehicles, but even these are at low coastal elevations where temperatures rise slightly above freezing for about two months of the year. The streams that result, though short-lived, are deep and swift and cut shifting channels down the slopes of the ramps. The streams and slushy snow combine to make the ramps impassable to sled-train prime movers such as LGP Caterpillar D8 or Paterson tractors, Tucker "Sno-Cats", "weasels", or other over-snow vehicles that mount the cap with ease during the rest of the year.

Even more dangerous than the open channels are the unpredictable, under-snow melt streams that flow on the surface of the ice but under the surface of the snow. Equipment breaking through this weak snow cover can be completely immobilized,

CONTRACTORS AND ENGINEERS

U. S. Army photographs



One of the haul trucks heads back to the borrow pit past Camp Tuto. The transverse road is about a half mile from the edge of the cap, while the ramp road rises up the gently sloping portion of the cap.

and operators run the risk of meeting death in the icy waters. Only a road guaranteed year-round access to the cap.

Road crosses dangerous area

The main Ice Cap road, completed this season, extends to "Mile 3" of the Ice Cap trail, which is about the limit of significant melting of surface snow. The road may ultimately be extended beyond this 3-mile limit. A second road was built parallel to and about a half mile from the edge of the Ice Cap so that methods of construction could be investigated before work was started on the access road running perpendicular to the melt stream pattern.

The ramp road itself begins at the First Engineer Arctic Task Force base camp, Camp Tuto, about fifteen miles from Thule Air Force Base in the northwestern portion of Greenland. This narrow strip of coastland consists primarily of glacial till. But the borrow material was limited by the shallow depth of thaw to an active zone varying from about 2 to 4 feet in depth.

Great care was taken in borrow selection, since any fines would wash right out of the road and bring capillary water to the surface. Several test sections were made during construction with various qualities and depths of fill materials. But only bouldery materials, virtually free of fines, were successful. For this reason, borrow pits were selected for their wealth of free boulders going to maximum depth, as well as minimum haul distance.

Working borrow pits

Caterpillar D8 dozers pushed borrow material into windrows, making exceptionally long passes to build a high windrow because of the thinness of the thawed layer. The crawler cranes working the areas had to be moved more often than was desirable because of the wide intervals left between the windrows. The windrows were generally 200 to 300 feet apart and 15 to 20 feet high. Some of the borrow areas were re-worked profitably after they had been left to thaw for a few weeks.

Learn two lessons

In this extremely cold climate, crews learned to windrow only material that could be used in one season.

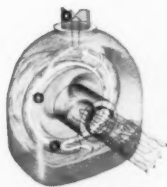
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THESE PORTABLE PUMPS PRIME AT 30 FEET LIFT!



PUMP AT REST

Captured liquid retained for priming. Note absence of the usual check valve.



PRIMING ACTION

Entrained air (B) escapes at (A) to be discharged. Priming liquid returns (C) to entrain more air.



PUMPING ACTION

Straight-in suction voids entrance restrictions. Water enters direct to the eye of the impeller.

When rain, springs or seepage is clobbering construction, it's good to have Gorman-Rupp "80" Series Pumps ready in the equipment pool.

These new pumps prime and re-prime at lifts of up to 30 feet. They move easily because of their lightweight, aluminum construction. (The Midget weighs only 48 pounds.)

Look at the cutaway views.

Straight-in suction delivers liquid directly to the impeller's eye. Capacity, efficiency and suction lift are increased. No check valve.

Four models:

Midget, 1½", 6,500 GPH, 2.25 HP;
Pelican, 2", 8,500 GPH, 2.75 HP;
Hawk, 2", 12,000 GPH, 5.5 HP;
Eagle, 3", 18,000 GPH, 6.8 HP.

You saw them at the Road Show. Buy them now at your Gorman-Rupp Distributor.

THE GORMAN-RUPP COMPANY

305 Bowman Street • Mansfield, Ohio



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Motor graders and tractor-dozers level the silty, sandy gravel making up the 6 to 12-inch surface of the ramp road across the Ice Cap.

(Continued from preceding page)

This is an important precaution to be taken, because even when the material contains only a small percentage of fines, the stockpiles freeze solid when temperatures begin to drop in early September. Even in the relatively warm summer months, these stockpiles will not thaw through more than a few feet of their depth. The only stockpiles that did not freeze permanently were those of screened, crushed rock or gravel, or extremely coarse, fine-free material with less than 1 per cent passing the No. 200 sieve. Solidly frozen windrows still dot the landscape, testifying to the over-anxiety that wasted many square

miles of land and a great deal of labor.

But if crews learned a hard lesson from this experience, they also learned that it is very profitable to work late during the short summer season, stockpiling materials that will not freeze up. This stockpiled borrow can be used to start work early in spring, before it becomes possible to work new borrow areas.

Grading operations

Only a limited amount of material was crushed for the ramp road, since it did not require a surface that was too solid. Such a surface would be ruined by heavy track-laying prime movers using the road. Most of the production of a small, 25-cubic-yard crusher went into test sections.

Base course compaction was achieved by hauling equipment alone. One Cat D8 worked continually to push the road out, rough-leveling and walking the base course as it went. This job demanded the best of operators, for even on days that were clear and calm "down below", the wind blew stinging snow across the Ice Cap and temperatures seldom rose above 32 degrees F.

The road surface consists of 6 to 12 inches of silty, sandy gravel, which was borrowed from an area near the base of the ramp. A $\frac{3}{4}$ -yard shovel and one or two dozers furnished all the surfacing fill needed. Wherever terrain permitted, scrapers were used to load the borrow.

Most of the surfacing was compacted to a 90 per cent modified AASHTO density, and a large part of the compaction job was done by the Mack 10-yard dump trucks that hauled both the base and surfacing materials to the road.

Dust a problem

While grading operations were being carried on round-the-clock over the 7 miles of haul and ramp roads, a water distributor was always available, for dust—surprisingly—is a big problem in the Arctic. Low humidity dries road surfaces—even on the cap itself—and the dust is blown to the sides of the road by the ever-present winds that often reach velocities of 40 to 50 mph in summer. Particles of dust settling on the snow and ice then increase the solar radiation absorption rate, causing increased melt. Since the road fill insulates the ice on which it is placed, while natural melt, and melt due to the dust, lowers adjacent areas, the original several hundred feet of road, built in 1954, has perched some 15 to 20 feet.

Berms, dikes protect road

To help combat this perching, which causes shoulders to deteriorate, crews constructed wide berms on each side of the lower end of the road. These berms, of a lower quality material than that used for the road, insulate a wide strip of ice and effectively terrace the perch. The berms are still under test so that their opti-



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2. No bleeding of asphalt film after breaking of the emulsion.
3. No washing during application.
4. Excellent retention of aggregate.
5. Strong adhesion to treated pavement surface.
6. Resistance to softening and loss of cover on hot days.
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For further information, write for Seal Coat Specification No. 7.

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TENNESSEE
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157 Church St., New Haven 10, Conn.

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mum width can be determined, but according to the project supervisor, this width will probably be from 20 to 30 feet.

Much of the fill for the berms was hauled to the road by scrapers, which proved excellent for the short-haul work. The same dozers that worked the fines borrow pit push-loaded the scrapers.

As the berms were built, berm dikes were constructed at intervals so that any melt streams that might appear will be directed away from the shoulders of the ramp road.

A last problem, peculiar to the Ice Cap road, is one that will show up in the future. The natural "subgrade"—the glacial ice itself—moves several feet annually, and this will vary from station to station.

Transverse road built

Although the Ice Cap access road was the major effort, the Task Force constructed another road, parallel to the glacier, to develop methods and designs for crossing the melt streams that race down the ice surface in the summer months of July and August.

This road from the base terminates at the portal of an ice tunnel, a mile away. The ice tunnel is another Task Force project, which will be used for research work and the development of ice mining techniques by the Corps of Engineers' Snow, Ice, and Permafrost Research Establishment. The tunnel portal lies at the base of a sheer cliff, and prior to the construction of the transverse road, access to the portal was extremely difficult.

This road was also constructed of the fine-free, bouldery material used in the ramp road. Melt-stream paths were crossed with several types of culverts, including both Armco round and semicircular corrugated steel culverts. The round culverts were less satisfactory, since they perched with the road after one year. The semicircular culverts, more satisfactory, were set on 2x6-inch footings to prevent settlement due to compression-melting of the ice. Melt water flowing under the culverts has appeared to stabilize the larger channels and prevent road washouts at other places.

One sizeable melt-stream channel crossing the road was spanned with a pile-bent bridge which is probably the first bridge in the world to rest on an ice foundation. Measuring 80 feet long and 25 feet high, the bridge is supported by 10-inch piles, frozen 10 to 12 feet deep in holes augered into the ice. The superstructure consists of standard U. S. Army steel trestleway sections.

Near the end of the transverse road, the terrain changes abruptly from a gentle slope to a steep ice cliff, and a long side-hill cut had to be made through the 10 per cent slope of solid glacial ice.

Both these road jobs were essentially research and development projects, but they have left behind them a road network across broken coastal terrain to high glacial ice. Man may

never conquer the Ice Cap, but through civil engineering, he has learned how to live with it and overcome obstacles which were once considered insurmountable.

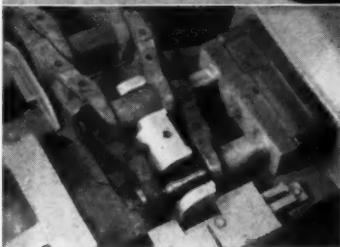
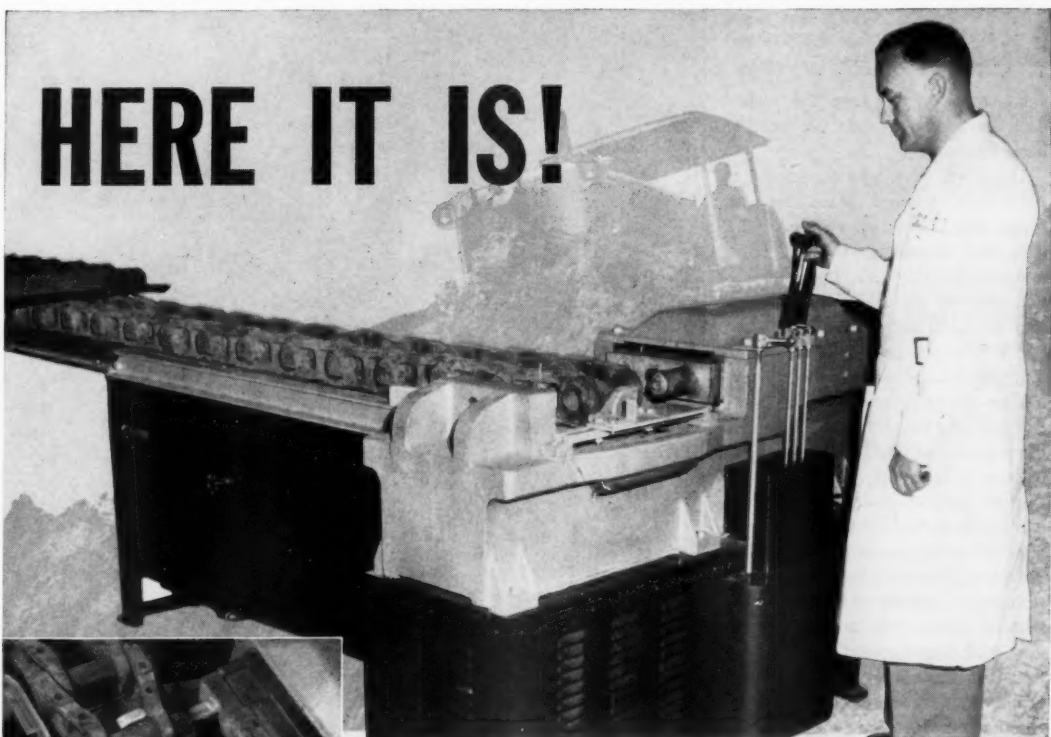
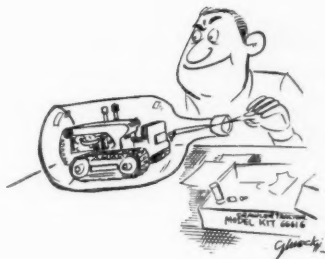
Personnel

Construction forces were under the command of the U. S. Army Corps of Engineers' First Engineer Arctic Task Force, which is commanded by Lt. Col. Elmer F. Clark. The engineering and research aspects of the job were performed by the Waterways Experiment Station at Vicksburg, Mississippi, and the Arctic Construction and Frost Effects Laboratory of the

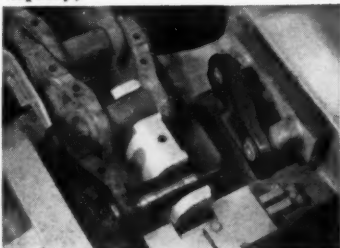
New England Division, Corps of Engineers. Project engineers on the job in 1955 and 1956, respectively, were Dr. William F. Brace and Dr. Ronald Scott, both of ACAFEL. Serving as project supervisor, since original planning began, was Henry W. Stevens, ACAFEL, whose years of experience in Arctic construction made this project move ahead with efficiency and speed.

THE END

Switzerland's all-weather roads total 48,000 kilometers, 17,000 of which are designated as main or cantonal highways; the remaining 31,000 are municipal.



Link positioned in saddle . . . forcing head (right) aligned against pin and bushing . . . ready to press. (125-ton capacity)



Operation completed . . . pin and bushing removed from one sidelink, quickly, safely and easily. Forcing head retracted.

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Names in the news

Ammann, design consultant for bridge addition

Othmar H. Ammann will be the design consultant on the second deck of the George Washington Bridge in New York City. Original designer of the bridge and chief engineer of the Port of New York Authority during construction of the bridge over 25 years



Othmar H. Ammann, design consultant for the second deck of the George Washington Bridge, a structure which he designed more than 25 years ago.

ago, Ammann will keep the second deck in harmony with the bridge's basic design.

The lower deck was considered in Ammann's original plans for the bridge and allowances were made for it in the foundations, towers, cables, and suspender system. The \$182 million project includes a 6-lane deck and approach highways in New York and New Jersey. Detailed design plans and preliminary test borings in Manhattan are expected to be under way this fall, and it is believed that actual construction will begin in the summer of 1958. It is expected to be open for traffic in 1962.

A senior partner of the engineering firm of Ammann & Whitney, New York City, Ammann has designed San Francisco's Golden Gate Bridge, the Delaware Memorial Bridge, and the new Walt Whitman Bridge across the Delaware River. He will design the proposed Narrows Bridge to be built by the Port Authority to connect Brooklyn and Staten Island, N. Y., and the Throgs Neck Bridge between Queens and the Bronx.

N. C. highway department promotes C. W. Lee

Cameron W. Lee was named assistant director of highways for the North Carolina State Highway Department. Lee, a division engineer of the 14th highway division at Sylva, has more than 16 years of highway service to his credit.

He started as a rodman in 1935 for the highway commission, and later was promoted to instrumentman, junior resident engineer on construction, maintenance supervisor, district engineer, and senior resident engineer.

Tuttle Co. appoints

Lyle M. Richardson has been appointed president of the Morton C. Tuttle Co., Boston, Mass., succeeding the late Morton C. Tuttle. Richardson has been vice president and general manager of the Boston contracting firm.

Wayne O. Stoughton is the new president of the Wire Reinforcement Institute, Inc.



Stoughton elected to head wire reinforcement group

President of the Wire Reinforcement Institute, Inc., Washington, D. C., for the 1957-58 year is Wayne O. Stoughton, a Pittsburgh steel ex-

ecutive. Serving as vice president is Earl C. Planett of Downey, Calif.

Stoughton is manager of sales for Pittsburgh Steel Products, a division of Pittsburgh Steel Co. He joined the firm in 1947, became district manager of the Philadelphia office in 1951, assistant general manager of sales in 1953, and won a promotion to his present post last year.

The newly elected vice president of the national trade association of steel welded wire fabric manufacturers is president and owner of the company bearing his name, Planett Mfg. Co. of Downey, Calif.

Stone & Webster elects two new directors

Fred W. Argue and Edward J. Ford have been elected directors of Stone & Webster Engineering Corp., New York, N. Y. Argue is vice president and engineering manager, and Ford is vice president and senior construction manager.

The company also appointed Theodore E. Casselman, Jr., chief chemical engineer. He has been engaged in the design and engineering of various chemical, petroleum, gas, and other industrial plants built by the firm.



ON THE CONNECTICUT TURNPIKE



'No place for trucks you have to "baby"!' Gammino's Macks are hauling close to seven million yards of rock and earth as the Connecticut Turnpike is rushed to completion. That means those mighty shovels are really moving as they drop the heavy, jarring loads of rock into the trucks beneath. It also means that Gammino's Macks are taking tremendous punishment, both from the hustling shovels and from the make-shift roadbeds over which they operate in an endless loading-dumping cycle.

"Sure, it's backbreaking work for any other truck," says Mr. Gammino. "That's why we use Macks."

No job's too tough for Gammino

because... **THEY**

Want the real pitch on Mack can-do?

Ask Frank Gammino of M. A. Gammino Construction Company, Providence, Rhode Island. He'll talk Mack with you all afternoon.

Ask him about the small but important jobs, where Mack economy enables him to deliver at a profit.

Ask him about the big jobs, where the power of Mack schedule-meeting dependability of his Macks pays for entire operation.

And ask him about the really rugged jobs—chassis-jolting rock-loading jobs... the up-to-hubs-in-mud jobs... the jobs where his Macks work round the clock, rushing out big-yardage loads week on end without a break or a breakdown.

Then ask him why he has still more Macks on order. We'll stand on that. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

YEAR AFTER YEAR IN THE U. S. A., MACK DIESEL TRUCKS OUTSELL ALL OTHERS

John A. Tantillo, new project manager for the military seaport being built at Rota, Spain, by Corbetta Construction Co., Inc., and Construcciones Civiles, S. A., of Spain.



Corbetta Construction promotes Tantillo

John A. Tantillo, construction superintendent for the Corbetta Construction Co., Inc., New York, N. Y., has been assigned as project man-

ager of the \$18 million military seaport and fuel supply base being built at Rota, Spain, under a joint-venture contract by Corbetta and Construcciones Civiles, S. A., of Spain.

Tantillo, who was construction su-

perintendent for 11 years, is succeeded by James B. Lyttle. Lyttle previously directed the construction of the last three miles of the New York State Thruway in Yonkers, N. Y.

Dravo Corp. news

Dr. William C. Marshall has been named medical director of Dravo Corp., Pittsburgh, Pa., and its subsidiaries. Formerly staff physician for Tennessee Eastman Co., Kingsport, Tenn., Dr. Marshall succeeds Dr. Hugh E. Chavern, who resigned.



James B. Lyttle, who succeeds Tantillo as construction superintendent at Corbetta's New York office.

NCSA appoints Bixby field engineer

Howard M. Bixby has been appointed field engineer of the National Crushed Stone Association. Bixby was formerly with the U. S. Bureau of Public Roads as regional materials



Howard M. Bixby, new field engineer for the National Crushed Stone Association.



ON THE PROVIDENCE RIVER BRIDGE JOB

Gammino's Macks are keeping big buckets busy. Concrete, not excuses, is what this job calls for—any late deliveries mean expensive, profit-robbing delays. "With Macks on the job," says Mr. Gammino, "no one sits on his hands."

DEPEND ON MACKS

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Construction talk

jobs, at a

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MACK
first name for
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OVER-THE-ROAD HAULING OF CRUSHED STONE AND DIRT

... a wise contractor keeps a close eye on running costs—fuel, maintenance, down time, tire wear, etc. Mr. Gammino does just that, and he reports: "Nothing touches a Mack for ton-mile economy."



engineer for Region 2—Delaware, Maryland, Ohio, Pennsylvania, Virginia, West Virginia, and the District of Columbia.

Reznicek elected treasurer of Crow Construction Co.

George A. Reznicek has been elected treasurer of the William L. Crow Construction Co., New York, N. Y. He formerly had the same post with the



Newly elected treasurer of William Crow Construction Co. is George A. Reznicek.

company, but since 1951 has been on special assignment in connection with the firm's overseas construction work.

A graduate of Rensselaer Polytechnic Institute, Reznicek joined Crow Construction in 1934 as a timekeeper, and worked his way up to assistant superintendent, project engineer, purchasing agent, and treasurer.

Weber named chairman of AASHO committee

Carlos A. Weber, chief engineer of the Michigan State Highway Department, has been appointed chairman of the design committee of the American Association of State Highway

Carlos A. Weber, new chairman of the design committee of the American Association of State Highway Officials.



Officials. Weber has been the Midwest member of the group's committee on planning and design policies for several years.

He has been with the Michigan State Highway Department for 37 years. Weber served in many capacities in the design field before becoming design engineer. He then became road engineer, in charge of both design and construction, and later was promoted to chief engineer.

←For more facts, circle No. 250



Heated concrete, chuted to the footing forms for the south wall of the Caterpillar plant, is consolidated by a workman with a Maginniss vibrator. Concrete is covered with straw to prevent it from freezing.



Straw-covered canvas protects the trench as workmen brace Economy steel panels with 2x4's. This phase of the work is being done by Darin & Armstrong, Inc., Detroit, Mich.



The steel Economy panels, averaging 3x3 feet in size and backed by single 2x4 wales, are stripped by a workman. Concrete was protected with straw for 72 hours after pours were made.

Winter work

Outside work at plant takes winter into account

Pours with heated concrete made on basement and foundation walls; borrow pit worked for frost-free material for backfill

by **BILL ALLEN**
field editor



Cold weather makes backfilling a special job. When gravel and sand contained too many frozen chunks, this Cat D8 tractor used a ripper to break up frozen earth at the edge of a borrow pit so that frost-free material could be obtained.

(Additional photo
on front cover)



Fresh excavation from the borrow pit is loaded into a Mack 14-yard truck by a Maniotowoc 2000 Speedcrane equipped with a dragline bucket. The material was used to backfill some 25,000 feet of sewer line outside the building.

With site grading completed before the start of last winter, work on the \$17 million Caterpillar Tractor plant near Aurora, Ill., was able to continue with little interruption, despite the severe cold.

With temperatures ranging well below freezing, a good percentage of the

footings and foundations walls was poured. And though frost at times penetrated the ground to a depth of 3 feet, ripper and backhoe teams dug trenches for the major portion of the 25,000 feet of exterior pipe on the job.

This plant, designed by H. K. Ferguson Co., Cleveland, Ohio, will pro-



A Maniotowoc 2000 Speedcrane, equipped with 1-yard clam, drops select backfill material near the foundation walls of the heating plant. This material is being compacted in 8-inch lifts.

CONTRACTORS AND ENGINEERS

wide for 1,250,000 square feet of manufacturing floor space and 100,000 square feet of office space. The one-story, structural steel frame plant will be ready to make Caterpillar D2 and D4 tractors, as well as Traxcavators, early in 1958. The office building, two stories high and faced with brick, adjoins the northeast corner of the plant.

Other buildings on the 350-acre site include a heating plant, separate structures for oxyacetylene work, research, oil reclamation, and storage. Two bituminous-surfaced parking lots will provide space for 2,500 cars. A 300,000-gallon steel water tower will store water from the three 1,400-foot-deep wells located on the site.

Depending on a commercial plant for heated concrete, Darin & Armstrong, Inc., Detroit, Mich., went right ahead through the winter pouring foundation walls, basement walls, and pedestals for the new Caterpillar Tractor Co. plant near Peoria, Ill. Canvas, topped with straw, protected the pours against the cold.

As has been the company's policy in previous plant expansions, Caterpillar's own forces are acting as the general contractor. The actual construction work is being done by about nine subcontractors.

Heat foundation wall pours

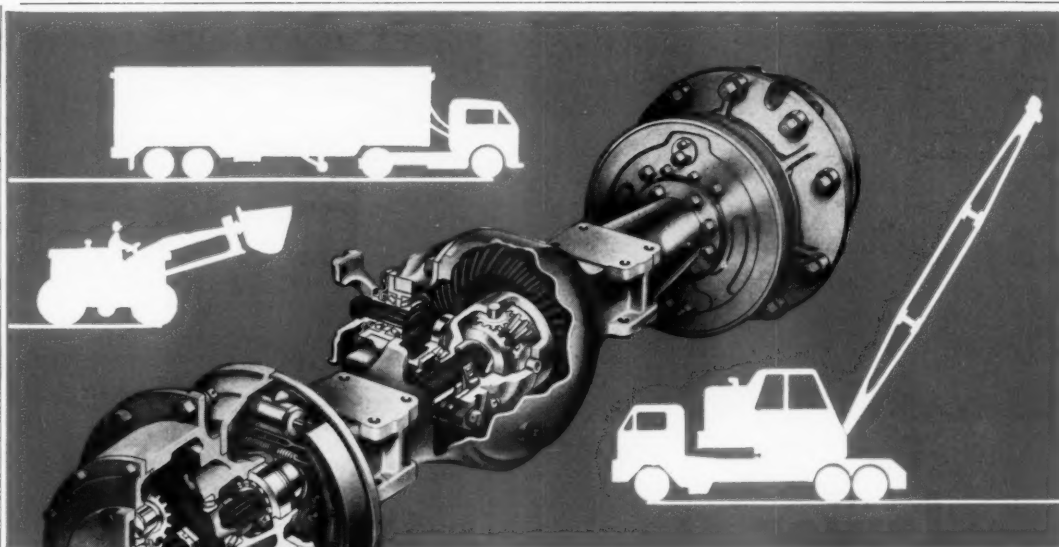
During the winter, the basement walls for the powerhouse, as well as part of the foundation walls and pedestals for the plant, were formed and poured. Darin & Armstrong, Inc., Detroit, Mich., used Economy steel forms for wall pours. These steel panels, averaging 3x3 feet in size, were backed with single 2x4 wales. Heated concrete, supplied by Fox Valley Transit Mix, Inc., Aurora, was chuted from the transit mix trucks to the forms. A Maginniss motor-in-head vibrator consolidated the mix. After the concrete had been poured, it was covered with canvas, which was topped with straw. This protection was provided for 72 hours. All concrete pours were heated for protection against the cold.

Pipe laid in winter

During the winter months, a wide variety of types and sizes of pipe was laid. Small-diameter Transite Korduct pipe to carry electrical wiring was installed by Hatfield Electric Co., Inc., Chicago; cast-iron pipe carried the sanitary waste; vitreous clay tile carried the industrial waste, and reinforced-concrete pipe up to 84 inches in diameter was used in the storm sewer. As part of the outfall line of the storm sewer, two 84-inch Armco section pipes were tunneled for a distance of 100 feet under the railroad that adjoins the site. These twin pipes drained into a 9x12-foot Multiplate arch pipe that was assembled

(Continued on next page)

This Caterpillar D8 tractor with bulldozer blade, doing grading work early in the job, pulls sheepsfoot rollers in tandem.



How to control that costly broken-shaft nuisance . . .

CLARK Planetary AXLE

Check the extraordinary record of performance established by this axle—in the toughest service any axle is required to meet:

- Excavator Cranes
- Tractor-Shovels, Bulldozers, other construction machines
- Heavy Duty Trucks for highway and off-highway operations
- Tandem-Drive Units for all applications

Here's a simple engineering idea that hit the jack-pot in spectacular fashion—the Clark Planetary Drive Axle. File these startling facts in your mind:

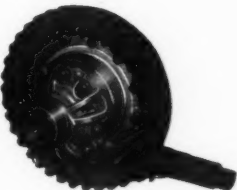
Reduced torque load on shafts—Putting the planetary assembly (the final reduction) in the drive-wheel hub, takes 70 per cent of the torque load off the axle shafts. Result: shaft wind-up and surge virtually eliminated—and broken axle shafts practically unknown!

Less weight—yet stronger—an astonishing fact: severest torque loads, typical of extreme off-highway service are handled easily by gears and shafts smaller in size and therefore considerably lighter in weight than conventionally designed axles of equal capacity.

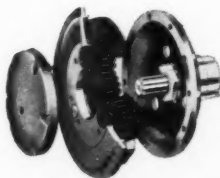
Road speeds up to 30 mph—an outstanding combination of rugged power characteristics plus highway speeds up to 30 mph for job-to-job travel—a big and vital saving.

Special for truck operators—faced with extremely difficult hauling conditions, truck owners have converted regular units to 4-wheel drive by installing two Clark Planetary axles (with Clark Torque Converter and Clark Transmission)—with complete success.

Don't fail to get the facts about this revolutionary solution to numerous problems. The coupon will get those facts to you—immediately.



Primary Reduction in the center section, by helical bevel pinion and gear.



Second Reduction in the drive wheel—a sun gear splined to the axle shaft and three planet gears driving an internal gear in the inner periphery of the wheel, as close as possible to the point where tractive effort is applied. Two types: steering and non-steering.

**CLARK®
EQUIPMENT**

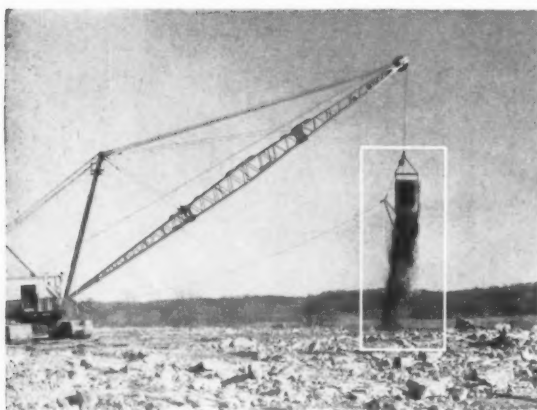
CLARK EQUIPMENT COMPANY • AXLE DIVISION, Buchanan 7, Michigan
Please send illustrated bulletin on the Clark Planetary Axle.

NAME _____ POSITION _____
FIRM _____ ADDRESS _____
CITY _____ STATE _____

For more facts, use coupon, or Request Card at page 18 and circle No. 261



A Caterpillar DW21 tractor with No. 470 scraper spreads a load of material on a fill at the 350-acre site of the plant. Completion of grading before winter set in helped other phases of work to get started early.



lower cost per yard

Rugged work requires rugged equipment. Whatever the material... the built-in stamina of Hendrix Dragline Buckets keeps them on the job... producing more work at a lower "cost-per-yard." When digging conditions are rough... on small jobs or large... men who know always specify Hendrix.

"A Type for Every Digging Purpose"

1/4 to 40 Cubic Yards

All Hendrix Buckets available without perforations

HENDRIX DRAGLINE BUCKETS

HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA

For more facts, use Request Card at page 18 and circle No. 262

(Continued from preceding page)

on the bank and then placed in the open ditch. Totals of underground pipe are an impressive 25,000 feet for exterior sewers and 30,000 feet within the buildings.

To handle the excavation for the pipelines, which varied in depth from 3 to 21 feet, J. C. O'Connor & Sons, Inc., Fort Wayne, Ind., made use of four backhoes and three draglines. Before the Koehring, Insley, and Lima 3/4-yard rigs could do any digging, it was generally necessary to break up the 2 to 3 feet of frozen ground by making two passes with a ripper pulled by a Caterpillar D8 tractor. Although the backhoes and draglines generally worked in fine gravel,

they sometimes encountered deposits of clay. This material, unsuitable for backfill material, was hauled away by International dump trucks.

Pipe laying was handled by The Stanley-Carter Co., Detroit, Mich., which used a Daybrook power loader hydraulically controlled crane, mounted on a Dodge 700 flat-bed truck, to carry and place the pipe. This operation kept close to excavation work so that the open trench would not freeze. When it was necessary to leave a trench open overnight in cold weather, the excavation was filled with straw to prevent it from freezing. As the joints of the vitreous clay pipe were sealed with Tylox neoprene gaskets, and mastic was used on the concrete pipe, there was no danger of the joints freezing.

Backfilling was a tricky operation, for the gravel and sand often contained frozen chunks that could not be used as backfill. Crane operators using a clamshell selected the frost-free material from the pile alongside the trench. When there was too much frost in this material, gravel was hauled in from a fresh excavation in a borrow pit.

Material placed over the pipe was compacted in 8-inch lifts by Jackson compactors delivering 4,200 two-ton blows per minute. These were powered by 15-amp, 3-phase generators driven by a gasoline motor. In the wider trenches, a Vibro-Plus vibrating roller, pulled by a Cat D6 tractor, compacted the backfill in 18-inch lifts. An air-cooled diesel engine on the roller produced 1,400, 1,500 or 1,600 vibrations per minute. At 1,600 vibrations per minute, the centrifugal force of the vibration is about seven tons.

Wellpoint system

As the water table in the vicinity of the power house was only 9 feet below the ground, a Griffin wellpoint system was selected to dewater the excavation for the basement. Wellpoints sunk about 25 feet in the ground rose to an 8-inch header line that circled the bottom of the 100 x 200-foot excavation. At one time, two Griffin pumps with intake diameters of 8 inches and outlet diameters of 10 inches, were needed to drain the heavy flow of water.

Earthmoving

Although the greater part of the site grading was completed before cold weather set in, the grading constituted an important initial phase of the operation. To handle the 900,000 cubic yards of dirt, J. C. O'Connor & Sons, Inc., moved in a fleet of earthmovers that were predominantly Caterpillar-built. He used nine DW21 scrapers, five D8 push-tractors, five D8 tractor-dozers and three No. 12 motor graders. And if the truth were told, he also smuggled in four LeTourneau-Westinghouse and 2 Gar Wood scrapers that were pulled by Cat D8 tractors. The DW21's made good time on the longer hauls, which averaged about 2,900 feet. The aver-

CONTRACTORS AND ENGINEERS

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age cut-and-fill was approximately five feet. The natural ground consisted of topsoil and clay on the upper 30 inches, with the balance of the excavation sand and gravel.

Fills were compacted to 90 per cent modified Proctor by two Bros 50-ton rubber-tired compactors and two sheepsfoot rollers. Two International Harvester and one GMC truck, each with 8,500-gallon tanks, wet the fill; two Killefer disk harrows manipulated the material.

Precast concrete for plant walls

Precast-concrete slabs, rising about 7 feet to the window sills, will form the lower portion of the plant wall. Extending above the window to the roof will be insulated metal panels. These protected exterior sheets are aluminum and contain vertical ribs.

The precast-concrete slabs will be cast on the site with the methods and equipment of Vacuum Concrete, Inc., of Philadelphia. The casting yard will have facilities for the simultaneous forming of ten panels, each one measuring approximately 20×7.5 feet, and with a 6-inch thickness. Vacuum lifts for the cranes as well as vacuum pads for forced drying of the concrete will be used.

Bethlehem Steel Co. will furnish and erect the structural steel for the plant and office building. The steel deck plates for the roof, to be furnished by Inland Steel Co., will be covered with a built-up, 25-year roof.

Personnel

In charge of construction for Caterpillar is vice-president T. R. Farley. Working with him are Clarence R. Stout, in charge of electrical and mechanical equipment, and Al Starr, in charge of structural work.

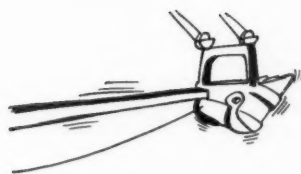
Among the prime contractors, William B. Machin is general superintendent for J. C. O'Connor & Sons, Inc.; Walter Foster is project manager for The Stanley-Carter Co.; and John Reid is coordinator for Darin and Armstrong, Inc. THE END

Lighting snow, ice-removal equipment surveyed by HRB

Early last year staff engineers of the Highway Research Board Correlation Service contacted 45 states on the use of flashing lights to identify snow and ice-removal equipment. The survey showed that 35 states use flashing lights; 19 use blue; 10, red; 2, amber; and 4, a combination of colors. Ten states do not use flashing lights.

Thirty-eight out of the 45 states answered the question on the diameter of the lens. Twenty-one use 6-inch diameter or larger; 17, 4 to 5-inch diameter; and 5, less than 4-inch diameter. Of the 12 states using flashing lights regarded as unsatisfactory, only four states met the AASHTO standards for lighting equipment for use on snow and ice-removal equipment.

OCTOBER, 1957



"I see they put the world's largest stripping shovel into action—some place in Indiana."



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A No. 50-C SUPER-VULCAN Hammer Driving "H" Beam Piling and Sheet Piling

Here, as in many thousands of jobs all over the world, VULCAN Pile Driving Hammers and Extractors are doing their work quickly, efficiently and economically. On your next job, specify VULCAN . . . the name you can depend on for the finest in pile driving equipment.

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Manufacturers of Pile Driving Hammers and Pile Extractors Since 1852

For more facts, use Request Card at page 18 and circle No. 263



13 winter precautions for maintenance men

The efficiency of operating equipment on a job often spells the difference between a profitable or a losing project. For this reason, contractors planning winter work will be wise to take a few fundamental precautions to make sure their rigs are at peak performance level in cold weather.

Here is a 13-point check list for cold-weather operation, prepared by the product application engineers of Gulf Oil Corp., Pittsburgh, Pa., and taken from the company's comprehensive "Gulf Contractor's Guide". Use it; it can mean money in your pocket.

1. Use a lighter grade of crankcase

oil, gear oil, and other lubricants as specified in the operator's manual for the equipment. Many operator's manuals contain a chapter on cold-weather operation which should be carefully studied.

2. Under extremely low temperature conditions, where heated storage space is not available, it may be advisable to drain the crankcase during idle periods and store the oil in heated quarters. If the oil is heated from between 140 to 160 degrees F before it is replaced in the engine, it will assist in starting.

3. Because of the increased tendency for moisture and sludge to gather in the crankcase during cold weather, the oil should be changed more frequently in winter.

4. Lubricating equipment and lubricants should be kept in a warm place. However, do not store grease next to steam pipes or a stove.

5. Fill all vehicle fuel tanks at the end of each day's operation to minimize overnight condensation. Each morning, open the drains in all fuel tanks and fuel filters to release any water which has settled out.

6. When filling a fuel tank from drums do not agitate the drums. This will stir up moisture and sediment which may have accumulated in the bottom and result in contamination of the fuel being fed into the tank. It is desirable to allow approximately four inches of fuel to remain in the bottom of the drum to prevent any water which may have accumulated from being pumped into the fuel tank.

Do not permit drums to sit upright, particularly if they are stored outside. Rain or melted snow can then collect on the drum heads and may be drawn inside by the breathing action of the drum, which results from temperature changes. If drums must be stored outside on end with the bungs on top, they should be tilted so that water cannot collect around the bungs. This can be done by resting them on wooden runners so that dirt, water, or other foreign matter cannot collect on the drum heads.

Diesel-fuel injection systems are more sensitive than gasoline-fuel systems. Extra care must be taken to prevent dirt, water, and ice from getting into the diesel-fuel system.

7. Open drain plugs in all dry compartments, such as clutch housings, at frequent intervals to release any water. Replace and tighten securely to prevent entry of mud or snow.

8. Frequently inspect radiator, hoses, and hose connections for coolant leaks. Check for the proper operation of thermostats and radiator



Everybody benefits with flexible, durable Wheeling Corrugated Metal Pipe



The highway designer...the engineer...the public

Designers specify versatile Wheeling Corrugated Metal Pipe because they know its flexibility will absorb shock and extreme vibration... that it won't crack or spall... that it holds up under light or heavy fill. And its durability means long, trouble-free service.

Highway engineers like the way the longer sections of Wheeling Metal Culvert Pipe can be installed with ordinary labor. Low cost of transportation, too, because of its nestability and light weight.

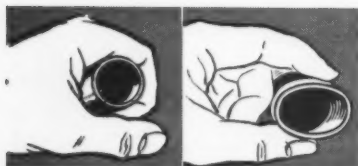
The public endorses Wheeling Culverts because they

offer the lowest cost-per-year of any type culvert available. This means lower taxes, better, longer-lasting roads.

Wheeling Corrugated Metal Culvert Pipe, or Pipe Arch are available in Copper Steel or Copper-Bearing Pure Iron, plain galvanized or bituminous coated (with or without paved invert), in a wide range of gauges and diameters. For details contact the Wheeling Corrugating Company warehouse, Culvert Shop, or sales office nearest you.



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IT'S WHEELING STEEL



SIMPLE TEST OF FLEXIBILITY. Squeeze a piece of garden hose with the entire hand. It "gives" uniformly around its circumference. (Flexible Pipe.) Now place it between the thumb and forefinger. Notice how easily it "gives" at both top and bottom. (Rigid Pipe.)



Wheeling warehouses, sales offices or culvert plants are in Atlanta, Boston, Buffalo, Chicago, Columbus, Des Moines, Detroit, Houston, Kansas City, Louisville, Madison, Martins Ferry, Minneapolis, New Orleans, New York, Peoria, Philadelphia, Richmond, St. Louis.

For more facts, use Request Card at page 18 and circle No. 264

When it comes to winter work, the first men on the job are the maintenance men—the men who have to get the equipment into top shape before it starts rolling toward the field. Their job is not done when the rigs start working. Maintenance, and particularly winter lubrication, is a never-ending job. These tips on maintenance for winter should be among the first things checked in preparing for cold-weather work.

shutters. Regularly check the anti-freeze solution and maintain proper mixture for prevailing temperature.

9. Keep batteries well charged. A discharged battery will freeze more quickly than one that is well charged. Check batteries frequently. At low temperatures, batteries will not take a fresh charge as rapidly as when they are warm.

Under extreme low temperatures, it may be necessary to provide an insulated box for the battery. In some cases it may be necessary to provide external means for keeping the battery warm to insure satisfactory operation.

In cold weather, add make-up water just before using equipment. This gives the water a chance to mix with the electrolyte and prevents freezing. Batteries which are charged at 1.250 to 1.275 (specific gravity) will not freeze at temperatures usually experienced in this country.

Battery efficiency decreases as the temperature falls. At 0 degrees F, the capacity of a fully charged battery is only 40 per cent of the capacity of the same battery at 80 degrees F. Since the power required for cranking increases as the temperature falls, it is important that an adequate state of charge be maintained. It should be remembered also that the capacity of a battery to take a charge is lower in cold than in warm weather.

Auxiliary starting batteries, which are kept charged and stored in a warm place, are often used as "slave batteries" to operate the electric starting motors on diesel engines in cold weather.

10. Gasoline-engine starting. In starting a gasoline engine under extremely low temperature conditions, pull the choke out and turn the engine over several times before turning on the ignition. When the engine has started, set the choke at the point at which the engine will idle smoothly, settle the throttle at a fast idling speed, and allow the engine to warm up thoroughly. Do not leave the choke pulled out any longer than necessary. Never race an engine, especially a cold one. If gasoline fails to reach the engine, check over the fuel system. It may be frozen and have to be thawed.

Caution: a torch should never be used on the fuel system.

11. Diesel-engine starting. Auxiliary starting devices are standard or optional equipment on many diesel engines and operator's manual instructions on the use of these devices should be carefully followed. Under extreme conditions, a blowtorch may be applied to the air intake mani-

fold, if precautions are taken against fire. The engine should be idled until thoroughly warmed up before applying a load.

12. Do not park a crawler where it can freeze to the ground. A simple log berth will prevent this.

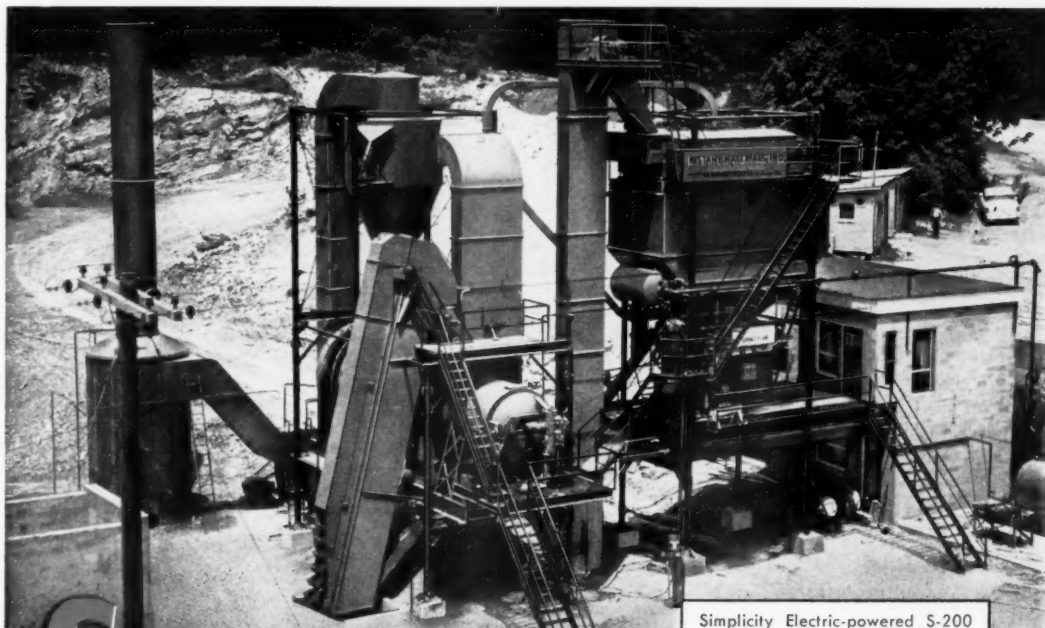
13. Tracks, track rollers, and car-

rier rollers require more attention in cold weather. Snow often packs between the track rails, causing excessively tight tracks. Special snow track grousers with holes in their centers eliminate packing and prevent tight tracks.

Frozen mud can lock rollers and

carrier tight. If a machine is run any distance with frozen rollers, the track rails will wear flat spots on them. Track assemblies should be cleaned as soon as the machine is parked to prevent this and to keep maintenance costs to a minimum.

THE END



Simplicity Electric-powered S-200 plant of Nittany Materials, Inc., at Stroudsburg, Pa. One man operation by fully automatic controls in the air-conditioned room at right.

Simplicity's

basically different design can mean much to you in the Road Building "Rat Race".

Here are some of the basic differences in Simplicity asphalt plants:

- **DOUBLE SHELL DRYER**
Dependable, Durable and Economical.
- **HOT OR COLD MIX**
Two Furnaces on One Double Shell Dryer.
- **DOUBLE ZONE MIXER**
Faster and More Thorough Mixing.
- **FOUR TON MIXER**
Properly Designed, Not An Overloaded 3-Ton.
- **FULLY AUTOMATIC BATCHING AND MIXING**
Faster, Accurate, Dependable.
- **ASPHALT PLANT AIR WASHER**
Protects Men, Machinery and Neighbors.
- **TUBULAR ERECTION COLUMNS**
Erection Time and Vibration Reduced.
- **HOT SPOT ASPHALT TANK**
Asphalt Hot—Quicker and Cheaper.

● **Lowest price, highest quality--sales price below 50c per pound.**

THERE'S A SIMPLICITY PLANT NEAR YOU

On request, we'll be glad to send you the name and location of a nearby installation.

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FROM BUILDER TO BUYER
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W inter ork



Behind the canvas enclosing the top four floors, plastering and concrete work continues on the Inland Steel Building, despite cold weather. Even when temperatures fell below zero, heaters kept the enclosed floors at about 70 degrees F.



Below the plastering platform, a Silent Glow Model B. S. burner puts out 350,000 Btu's per hour. The heater, which can burn either kerosene or diesel oil, is automatically controlled by a thermostat.



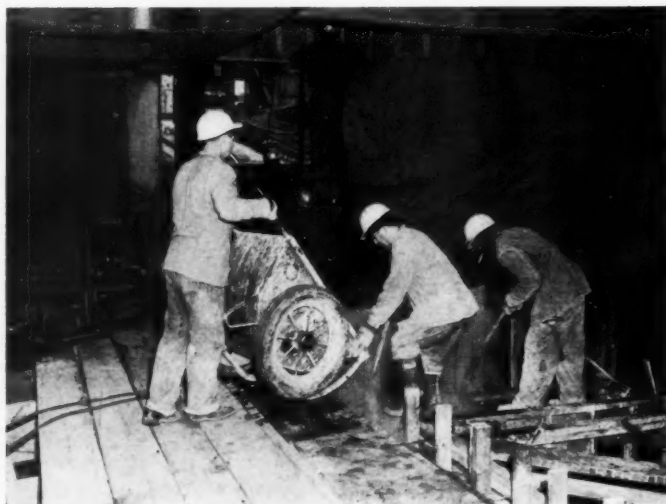
February is shirt-sleeve weather for a plasterer working on one of the enclosed floors. A final coat of lightweight plaster, containing Vermiculite and gypsum cement, is being sprayed onto the metal lath.

Building's tarp coat protects work and men through winter job

**With enough tarps to enclose five floors,
plaster and concrete crews ignore weather**

Despite one of Chicago's coldest winters in recent years, work continued on schedule at Inland Steel's 19-story office building in the heart of the Loop. Even though the mercury dropped below zero and winds whipped through the cold steel frame, plasterers and concrete finishers went about their work in comfortably heated canvas enclosures.

Located at the corner of Dearborn and Monroe Streets, the



A Gar-Bro buggy dumps to forms enclosing girders for the car ramp. Heavily clothed workmen consolidate the 70-degree concrete while this working area is being enclosed by tarps, background.

CONTRACTORS AND ENGINEERS

252-foot steel office building is the first major Chicago building to be supported on steel piling. The 192x120-foot lot also contains a 332-foot windowless service tower adjoining the main structure and a 2-story annex building.

Designed by Skidmore, Owings & Merrill for Inland Steel Co., the building incorporates a bold exterior-column design which leaves the floor area completely free of interior columns. The seven exterior columns on the Dearborn Street face are connected to the seven columns opposite by 60-foot girders at each floor. This wide clear span for the multi-story building provides a floor area of 10,250 square feet.

One of the lightest and thinnest curtain walls ever used will enclose the Inland Building. It consists of low (2-foot 10-inch) spandrel panels of 16-gage stainless steel backed by 2

A canvas overcoat, five stories long, was hung from the skeleton of Inland Steel's new 19-story office building in the heart of Chicago's Loop, permitting concrete work and plastering to continue through the winter. The heavy overcoat, and heaters burning day and night to keep the temperature inside the building at 70 degrees, combined to make this one of the fast-moving building jobs last season.

inches of concrete fireproofing. The windows above are glazed with double-paned glass. In combination, this wall is estimated to weigh 25 pounds per square foot; masonry walls and high window sills weigh about 40 pounds per square foot.

As all steel had been erected by November, 1956, the general contractor, Turner Construction Co., New York City, was in a favorable position to face the winter months. At this point, about 45 per cent of the concrete still remained to be poured, and fireproof plastering was about to begin. Canvassing off as many as five complete floors at a time, Turner was able to carry on with these operations throughout the winter.

Heat for the enclosed floors was provided by 16 Silent Glow 350,000 Btu heaters, nine Master 100,000 Btu heaters, and about thirty-five propane pots with a capacity of 150,000 Btu. During cold weather, about five Silent Glow Model B.S. oil heaters were kept burning night and day on each floor of the main building to keep the temperature around 70 degrees. Checks were made to test the carbon monoxide content of the air inside the enclosures, but the Chicago winds supplied enough natural ventilation to keep the percentage of the dangerous gas well below the allowable limit.

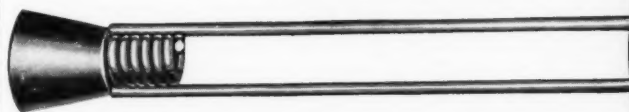
By November, all of the Milcor galvanized cellular steel flooring had been laid in the main building, and capped with 2½ inches of lightweight concrete. But about 15 of the service

(Continued on next page)

Construction continued 'right through the cold winter months. Men are wrapping the first-floor beams with wire mesh before erecting forming. The 4x4 wales for the beam bottoms are hung from the I-beam with Superior adjustable hangers.

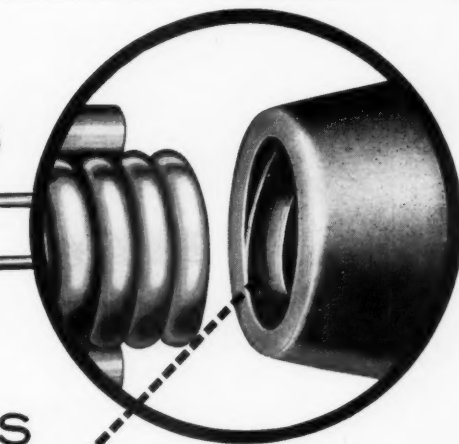


Threaded CONES CUT FORM COSTS

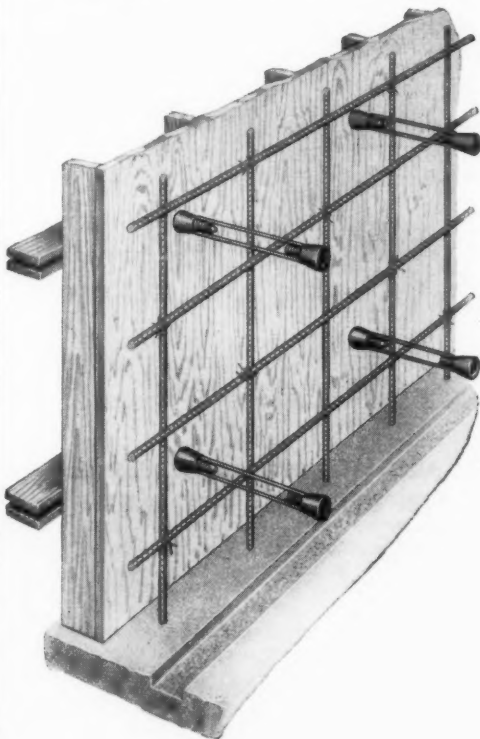


SUPERIOR Cone-Fast COIL TIES

Pat. No. 2,335,338



*** Patented Threaded Cone
Permits Extra Fast
Erection of Forms!**



Form erection crews can maintain extra fast schedules when using the Superior Cone-Fast Coil Tie Assembly because of a patented threaded feature whereby less than 2 turns of the Cone hold it securely to the Coil Tie. Designed especially for jobs where large panel forms are used for thin walls that do not permit a man inside forms, these Threaded Cones cannot be knocked off the Coil Ties when the opposing form is being applied. Here's an additional advantage . . . units may be bench assembled with the assurance that they will arrive at the destination point intact! Stripping is easier too . . . as the Threaded Coil Cones back out of the wall with a cone wrench.

Cone-Fast Coil Ties with Threaded Coil Cones are supplied for ½" to 1¼" Coil Bolts with safe load capacities from 5,000 to 36,000 lbs. Working parts (Cones and Bolts) are returnable for credit.

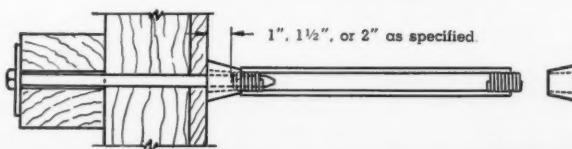
When specifications require the tie metal to be 1" or 2" back of the wall face, Superior Standard Coil Ties are available.

For complete details request a copy of our new Catalog 600.

SUPERIOR CONCRETE ACCESSORIES, INC.

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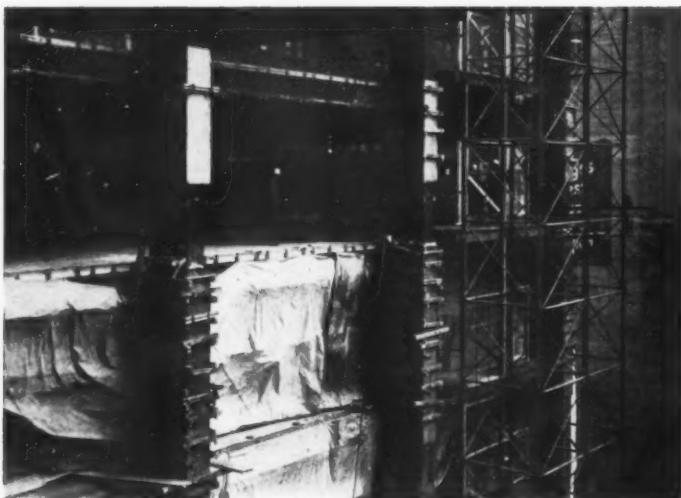
May be used with wood, combination wood and steel, and all steel form work for bridge piers and abutments, retaining walls, filtration and sewage disposal plants, and other engineering projects. Illustration above shows assemblies in place prior to erection of opposite form.



SUPERIOR



For more facts, use Request Card at page 18 and circle No. 266



While crews protected from wind and cold work on the enclosed lower floors, column forming continues on floors above. The formwork consists of 3/4-inch plywood backed by a combination of 4x4 and double 2x4 wales tied with Superior form hardware.

(Continued from preceding page)

tower's 25 stories had yet to receive the concrete that encases beams and columns and forms the reinforced-concrete floors. Since specifications did not permit calcium chloride to be added to the mix, the contractor had to take special care to keep the concrete above the freezing point while it was setting up. Tarpaulins, hung between the outside beams of the 50-foot-square tower, protected the concrete and the workmen. The floor above and the floor below the one being formed were enclosed, and Master oil heaters were fired up on the

lower floor to provide heat.

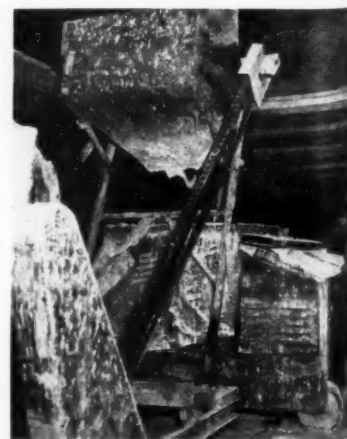
Conventional wood forms were suspended by Superior hangers from steel beams that had been wrapped with wire mesh. Concrete, supplied by Material Service Corp., arrived at the job in Smith mixers mounted on Autocar diesel trucks. The mix, heated to about 70 degrees F, was chuted to a collection hopper at the base of an elevator shaft in the service tower. A 1 1/4-yard bucket lifted the concrete up the tower and dumped automatically to the 1 1/2-yard floor hopper. Gar-Bro buggies carried the concrete to the point of placement, and Master and Wyco electric vibrators consolidated the mix.

The total of 5,500 cubic yards of structural concrete was used primarily in the service tower and in the first floor and basement of the main building. The lightweight concrete, which totaled 3,800 cubic yards, was used to enclose the 14 main columns and to cap the Milcor Celluflo of the upper 18 floors of the structure. The concrete required on this job comes to 10,000 cubic yards—which includes 650 cubic yards of reinforced concrete for pile caps. The total steel quantity is 10,000 tons. About a yard of concrete was used for each ton of steel.

Winter plastering

Fireproofing plaster that protects the undersides of the beams and floor of the main building was also applied during the cold winter months. Men worked on raised platforms on the floor enclosed with canvas, while Silent Glow space heaters kept the temperature above 70 degrees. Before the plaster could be applied, metal lath, supplied by Inland Steel Products Co., was attached to the undersides of the beams and the floor, leaving an insulating air space between the two.

Plaster was sprayed on the metal lath from a 2-inch hose fed by an E-Z-On plastering machine. A bucket conveyor transferred the plaster from an Anchor mixer to the hopper of the plastering machine. Vermiculite light-



The lightweight plaster being used in the building is being dumped from a bucket to the hopper of the E-Z-On plastering machine.

CONTRACTORS AND ENGINEERS



SINCLAIR

Start to go at 40 below...**FAST!**

SINCLAIR LEADS THE WAY IN SOLVING COLD WEATHER STARTING PROBLEMS

Now there's no longer any need to lose time, man-hours and money due to faulty cold weather starting. Sinclair has what you need to get going—in a hurry!

SINCLAIR STARTING FLUID permits trigger-quick ignition and smoother sustained burning, eliminates the possibility of detonation.

AMPCO-SINCLAIR ENGINE STARTER eliminates the need for "operator know-how"—automatically injects the right amount of starting fluid at the right rate of fluid flow for any engine, regardless of design, size or temperature.

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HIGH-QUALITY FUELS AND LUBRICANTS: For easy starting and full anti-wear protection under sub-freezing conditions, you can depend on Sinclair quality products such as—H-C Gasoline, Diesel Fuels, TENOL® Motor Oils, LITHOLINE® Multi-Purpose Grease and OPALINE® Multi-Purpose Gear Lube.

Talk it over now with your Sinclair Representative, or write Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N. Y.

For more facts, use Request Card at page 18 and circle No. 267



Crews on Patent Junior scaffolding platforms crank their way up the 48x22-inch exterior columns to install brackets that will receive the 13-foot-high 8-gage stainless steel panels.

weight aggregate and gypsum cement were used in the mix. After an initial "scratch" coat had been applied, the plaster was built up to a thickness of 1 inch. The hung ceiling, which conceals the fireproofing plaster, consists of perforated steel acoustical panels with fluorescent lighting.

Steel piling

Plastering and concrete work were done last winter; oddly enough, one of the initial phases of construction—the driving of steel piling—was done under a subcontract by Spencer, White & Prentiss, Inc., Chicago and New York, the previous January.

A total of 450 steel H-beam piles were driven to hardpan about 85 feet below street level to support the building and service tower. In addition, the subcontractor had to drive 10-inch H-beams, or soldier beams, on 6-foot centers around the edge of the 206x129-foot excavation. As excavation proceeded, timber lagging was inserted between the soldier beams.

At one time, as many as five pile-driving rigs were working in the 9-foot deep excavation. A Manitowoc 3500B with a Vulcan 800 hammer and a Lima 802 with a Vulcan No. 0 hammer, assisted by a Lima 1001 service crane, drove the bearing piles. Two smaller rigs drove the soldier beams. Since excavation followed pile-driving operations, special heavy follower beams, about 33 feet long, served as extensions on the piles and were pulled out after each driving. Steam for the hammers was generated by three Vapor-Clarkson units, each capable of producing 3,500 pounds of steam per hour.

Cross-lot bracing

A critical phase of excavation was the installation and prestressing of the steel beam cross-lot bracing, which counterbalanced the tremendous pressure against the sides of the big hole. Three cranes, working from street-level trestles, assisted in placing the first tier of bracing, which was about 10 feet below the level of the street. The tier consisted of a grid of steel H-beams with ends butting against horizontal wales welded to the soldier beams. When the cross bracing was in place, resting on the steel piles, each of the struts was pre-

stressed. This was done by cutting the strut in the center, then applying a force of up to 75 tons against the soldier piling with hydraulic jacks. Care was taken to limit the movement of the tops of the soldier beams to less than 1 inch in either direction. In this prestressed condition, the plates were welded across the cut in the strut to maintain the pressure.

As excavation continued to 35 feet below street level, two additional tiers of cross bracing were set, at 10 and 20 feet below the first tier. The cranes that placed the bracing—a Manitowoc 3000B, a Lima 802, and a Lima 1001—

were also used to clam out the excavation. As the tops of the H-beam bearing piles were uncovered, they were cut off to grade and capped with a 16-inch-square, 7/8-inch steel plate. This was later enclosed in a reinforced-concrete pad.

The three-level basement of the building contains a 60-car garage on the first level, a boiler room and storage area on the second level, and mechanical and air-conditioning equipment on the third. The 25-story windowless service tower that adjoins the main building houses six Otis automatic, electronic elevators and

PILE-PUSHER PLUS



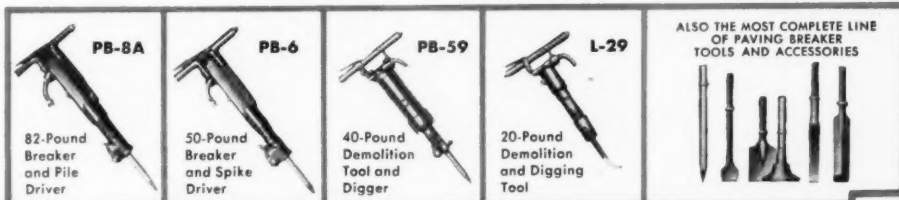
Ingersoll-Rand PB-8A Paving Breaker with pile driver fronthead, driving heavy wood sheeting on a large highway construction job.

I-R PAVING BREAKER

**doubles as a heavy-duty
pile driver or spike driver**

With an Ingersoll-Rand PB-8A Paving Breaker and two easily interchangeable frontheads, you actually have *three tools in one*—a heavy-duty paving breaker, a powerful pile driver and a spike driver. The pile driver head has a large striking face and is adjustable for sheeting up to 3" in thickness. A spike driving fronthead is also available for the light-weight PB-6 Breaker.

With Ingersoll-Rand's most complete paving breaker and accessory line, you can save time, effort and expense by matching the *breaker* to the *job*. Ask your I-R man for complete information, or send today for a copy of Bulletin 4127.



CONTRACTORS' COMBINATION

Ingersoll-Rand
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THE BEST AIR EQUIPMENT FOR BETTER HIGHWAYS
For more facts, use Request Card at page 18 and circle No. 268

one freight elevator. It also contains power and telephone lines, hot and cold air ducts that lead to each level through the Milcor cellular floor and sub-floor ducts.

Steel erection

Erection of the 5,000 tons of structural steel, handled under a subcontract by the John F. Beasley Construction Co. of Chicago, Dallas, and Muskogee, began in July, 1956, and was finished by November 1 of the same year. After steel erection had progressed above the street level, two guy derricks, each with a 140 American Hoist driven by a Cummins diesel, were put into operation.

The derricks handled the big sections of the main columns. These sections ranged from 33 feet to 42 feet long and weighed up to 22 tons each. As the building went up, the derricks were jumped two stories at a time. All joints on the main columns and girders were welded with General Electric and Lincoln welding machines using Lincoln LH70 jet rod. As many as 15 welding machines were powered by one Lincoln generator driven by a Cummins diesel. High-strength bolts were used to connect the smaller structural members.

Personnel

Turner Construction Co. has Louis W. Hall as project manager and F. K. Otto as field superintendent. Skidmore, Owings & Merrill has W. B. Hogenbirk as architectural superintendent. C. Douglas Monsson is project engineer for Inland Steel Co.

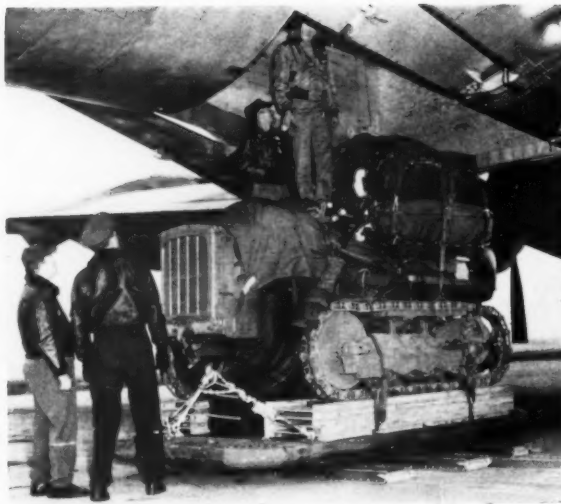
Among the subcontractors, Harry A. Armstrong, Jr., was superintendent for Spencer, White & Prentiss, Inc. E. J. Delahousay was superintendent of steel erection for the John F. Beasley Construction Co. THE END

Contract awards on N. Y. pier development program

Three contract awards, totaling \$1,679,501, have been let by the Port of New York Authority in connection with the \$85 million pier development program at the Brooklyn-Port Authority piers. A \$1,035,223 negotiated contract for dredging and fill was awarded to the Great Lakes Dredge & Dock Co., New York City, the only contractor in the New York Harbor area with a dipper dredge available for this work. This job is in connection with the \$7,350,000 Pier 1 in the Fulton Terminal area.

Work under this contract was started immediately and will be completed in December. It includes dredging 220,000 cubic yards of material, removing 200 timber piles, and placing 276,100 cubic yards of fill.

Two other contract awards were made in connection with the \$5 million Pier 10 in the Atlantic Basin area. They include a \$598,600 contract to J. Rich Steers, Inc., New York City, for demolishing the substructure of existing Pier 33, which will be replaced by the new pier; and a \$45,678 contract to Commercial Contracting & Equipment Corp., also of New York, for removal of Pier 33 shed.



WELL CUSHIONED AND PADDED, a Caterpillar Low Ground Pressure D2 tractor is readied to be hoisted into the cargo hatch of a C-124 Globemaster for a trip around the world ending at the Antarctic. This 7-ton machine, one of seven such tractors, will be dropped 2,000 feet by parachute at the South Pole to work on one of the seven observation stations the United States has built, as part of Operation Deep Freeze, for the International Geophysical Year.



A single drop of used oil from this truck indicates true condition of the vehicle's oil . . . and tells a lot about the engine's operation.



Daily oil checks assure maximum lubrication efficiency in this diesel locomotive.

Now—they're testing used oil in minutes

THE NEED for a fast, accurate and practical method for determining the condition of used oil has long been one of the more serious problems confronting fleet operators. It's obviously wasteful to discard still-good oil, but operating a vehicle with contaminated oil could lead to costly engine damage. This was an unsolvable condition which maintenance men had come to accept.

Since no two vehicles, even of the same make and model, are identical in performance or operation, maintenance men were compelled to compromise on oil change "averages" recommended by engine manufacturers. This procedure is uncertain and costly. Fortunately, this operating conflict has been resolved with the introduction of a simple but completely reliable oil check system . . . the Shell ADC Oilprint Analysis.

The ADC Analysis was primarily conceived to determine proper oil change intervals for individual engines. However, it goes much further. It is capable of actually reducing engine maintenance costs by disclosing certain mechanical defects before they have caused serious engine damage.

The test procedure is very simple . . . requires little

practice to perfect . . . and provides a reliable check of oil from merely two drops of used oil. In minutes, the degree of Alkalinity, Dispersancy and Contamination can be determined easily.

Here are several typical examples from various areas of the country. They show how fleet operators, employing both diesel and gasoline engines, have successfully and profitably applied the ADC program.

A Kansas City Freight Line

Operating a large fleet of trucks, one Kansas City freight line previously had drained and replaced oil every 3,000 miles. After adopting the ADC Oilprint Analysis, individual test charts showed that, in most cases, drainage would not be necessary at less than 6,000-mile intervals. Even at this doubled interval, engine life was not affected. Further proof was established when these engines were inspected at 87,000 miles and no appreciable wear was found on bearings, pistons, rings or valves.

An Idaho Logging Operation

Oil had previously been drained after a limited number of hours of use on an Idaho company's diesel loco-

Unique construction keys building of Thule air base

The northernmost air base in the world, Thule, located only 800 miles from the North Pole in Greenland, is rapidly assuming the title of the world's northernmost city. Since 1951, millions of U. S. dollars have been spent in the development of a protective cluster of air bases and radar stations at the top of the world.

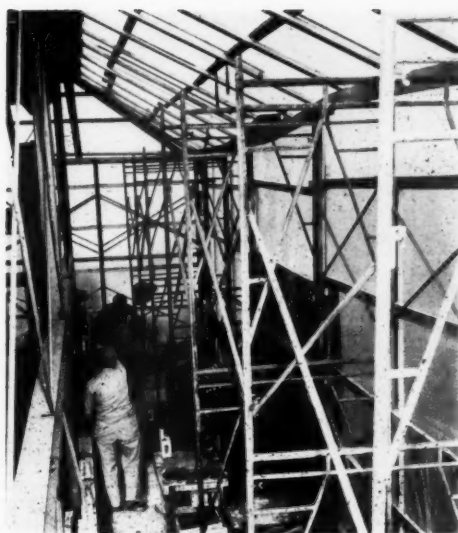
Since Thule is in a valley between two mountain ranges on the edge of Greenland's huge ice cap, construction techniques were the reverse of the usual. Unless the buildings were insulated, heat from them would melt the ground and cause the buildings to sink. As a result, the frozen ground is insulated with coarse gravel to prevent defrosting. In addition, all

buildings are raised on posts to allow the cold air to pass underneath, further protecting the permafrost ground.

All of the buildings are built to withstand 125 mph Arctic gales. Many of the buildings have concrete footings, poured at temperatures from 20 to 30 degrees below zero. All the buildings are made of prefabricated panels over structural frames.

Runways for military and commercial aircraft were built on top of an 8-foot layer of gravel and other frost-resistant materials. This was necessary to protect the permafrost and avoid settling of the air strips. Runways are usable throughout the year with a minimum of plowing.

Masons keep working on the new guidance and control laboratory for the Army Ballistic Missile Agency, despite a 30-degree temperature outside. The entire outside area part of the building was covered with sheets of polyethylene film.



Masonry continues on army unit in freezing weather

Carrying on masonry work while the mercury drops below freezing was demonstrated at the Army Ballistic Missile Agency, Huntsville, Ala. The Agency was putting up a two-story, 104x50-foot, 26-foot-high addition to its guidance and control laboratory. Early this year, when cold weather struck, it was evident that laying concrete block in the walls would have to stop.

But job superintendent C. B. Miller of Butler & Cobbs, Montgomery, Ala., came up with the answer. He bought Visqueen polyethylene film in 100x28-foot sheets, rented scaffolding, obtained wood framing, and put a crew to work. Within five hours they completely enclosed the steel-framed structure. The sun's heat and heat produced by an electric unit inside the building pushed the temperature up to a comfortable working level. Though the mercury hovered at the 30-degree mark outdoors, masons continued troweling on mortar and laying up concrete block inside.

Book on soil mechanics in retaining-wall design

Written primarily as a reference book for structural engineers, "Earth Pressures and Retaining Walls", by Whitney Clark Huntington, is intended to bridge the gap between retaining-wall design and that part of soil mechanics which deals with earth pressures and foundations. To give the reader a clear understanding of procedures, the principles involved have been emphasized by presenting numerical solutions. Typical designs for various types of retaining walls are given, with tabulated computations, explaining the approximations and discussing the possible limitations. Special consideration is given to the design of counterfort walls.

For easy reference to specific problems, each article has been made as self-contained as possible. The text is well illustrated, with figures showing earth pressure, stability, and design computations under usual and special conditions.

This book, priced at \$11.50, is available from John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.



Substantial oil economy is realized in this tractor, because oil is changed only when indicated by the Oilprint.



Taking a quick "fingerprint" of crankcase oil from an interstate carrier.

tives. With the ADC Oilprint Analysis as a guide, the oil-change interval has now been safely increased manyfold. The savings made possible by this on-the-spot test in oil, filter change and labor costs were considerable. Furthermore, leaky head gaskets are frequently discovered before any serious engine trouble develops. Here is another valuable plus for the ADC Oilprint Analysis.

A Washington, D.C., Transit Company

This transit company operates a large fleet of buses with both gasoline and diesel engines in use. With the difference in operating schedules . . . rush hours, short and long hauls, around-the-clock schedules . . . both engine types were believed to require complete oil changes every 2,000 miles. When the ADC program was instituted, the tests showed that oil-drain periods and minor maintenance checks could be safely extended to every 3,000 miles for gasoline engines and 4,000 miles for diesel engines.

Fleet operators, who are concerned with extending the service of crankcase oil and avoiding the risk of using contaminated oil, are invited to sit in while a Shell service engineer demonstrates the time-and-money advantages of an ADC Oilprint Analysis program.



Photo shows an oil-spot test card . . . one phase in the visual life record of a change of oil.



One drop of a special indicator* fluid developed by Shell checks the alkaline reserve in the oil.

*Indicator Fluid U.S. Patent No. 2,770,530

SHELL OIL COMPANY

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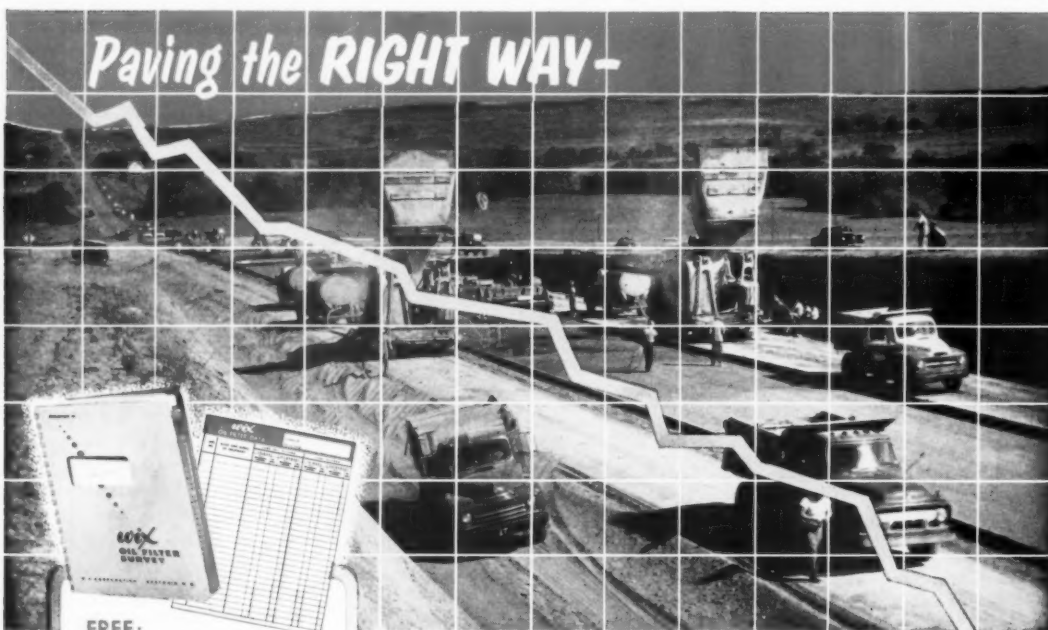
For more facts, use Request Card at page 18 and circle No. 269



Radio coordinates snow removal on 241-mile Ohio pike



Traffic continues flowing on the pike while an Oshkosh 5-ton truck plows an outside lane with a front-end plow. The hopper body of the truck is equipped with a spreader to distribute chemicals and abrasives over the roadway.



FREE:

Oil Filter Survey that lists correct WIX replacement Cartridges for every piece of your equipment, plus Inventory Control.

Fleet Manual for a continuing record on every engine — maintenance, repair, performance — at a glance!

There's a specific WIX Cartridge engineered for every engine in construction service... gas or Diesel — mobile or stationary — for fuel or lube oils.

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To bring Maintenance Costs **DOWN!** USE WIX HEVI-DUTY OIL FILTERS

... and see the results FAST in less down-time from engine troubles! Abrasive grit and dirt in your motor oil can knock out an engine in no-time — but, WIX Filter Cartridges keep oil *clean* all the time! — don't give these contaminants a chance to get in their dirty work. Install WIX Cartridges in all *your* engines. Keep your equipment on-the-job, on-time, and building your profits!

Depend on economical WIX Engineered Filtration Service for timely cartridge replacements. WIX will make a FREE Filter Survey for you listing all your equipment and showing the correct lube and fuel oil filter Cartridge replacements. Also, deliver a reserve supply of these Cartridges to your local WIX Wholesaler. One near-by source of supply for prompt, COMPLETE Oil Filter Cartridge Service — no heavy inventory for you! Ask your Jobber, or write direct, TODAY!

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In Canada: Wix Accessories Corp. Ltd., Toronto

For more facts, use Request Card at page 18 and circle No. 270

One of the most ultra-modern of communications systems will soon go into maximum use in combating winter hazards along the 241-mile-long Ohio Turnpike for the third season. Without this fast and trouble-free radio network, it would be virtually impossible to coordinate winter maintenance procedures to keep this important link open between the Pennsylvania and Indiana turnpikes.

Microwave and mobile radio

The backbone of the communications network on the Ohio pike is the Radio Corp. of America microwave link at each of the eight maintenance buildings along the superhighway. These towers eliminate the need for wire land lines which might be damaged by storms and cause a breakdown in communications.

Spaced about 30 miles apart, the 250-foot-high towers interconnect police cars, service trucks, toll plazas, maintenance areas, and administrative vehicles with the turnpike headquarters in Berea, on the outskirts of Cleveland.

Maximum clear space for the channels in any given area has been obtained by dividing the over-all communication network into the Eastern and Western Divisions. The headquarters in Berea, besides being the administrative center of the turnpike operations, acts as the nerve center of the vast communication network. Here, at the dividing line between the Eastern and Western Divisions, operations of the two are coordinated.

Five channels

The microwave system has a capacity of 24 voice channels, but only five are presently required to tie together all the administrative functions of the turnpike.

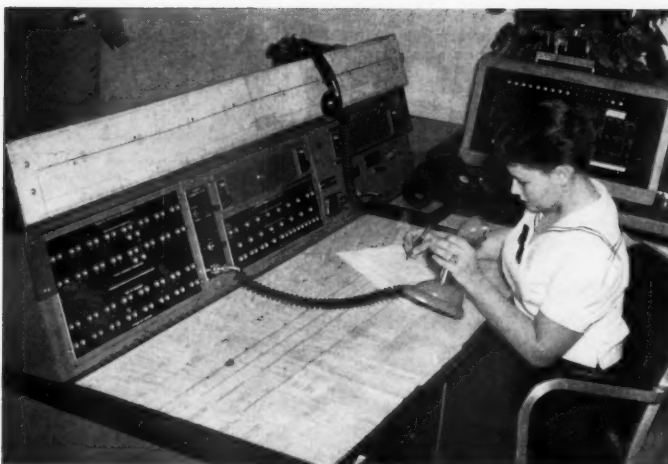
The first channel is used by the Ohio State Highway Patrol district specifically assigned to the road. This circuit links the 43 police vehicles, all of which are equipped with RCA Carfone-150 two-way radios. These transmit at 155.79 mc and receive at 154.71 mc.

The second or common communications channel links maintenance facilities, service trucks, 17 toll booths, and 16 administrative facilities. Also on this channel are the various field personnel responsible

CONTRACTORS AND ENGINEERS

The Ohio Turnpike is preparing modern tactics in the war against winter this year. On the 241-mile-long toll road, a microwave system will coordinate all types of winter maintenance procedures, which have been pre-tested to keep the road clear in any winter emergency.

A maximum of freedom on channels is provided by dividing the turnpike into Eastern and Western divisions, which have their operations coordinated at this Central Radio Control Room in the Berea, Ohio, headquarters.



for snow removal and for maintaining the highway during inclement weather. All RCA Carfone-150 radios on this circuit transmit at 159.15 mc and receive at 159.09 mc.

A third channel provides teletype facilities. Because teletype has the added advantage of providing a permanent record of communications, this channel is generally used for relaying messages associated with the business of the turnpike. An important function of this channel is the quick dissemination of weather information. Weather reports and forecasts, received from the Cleveland Weather Bureau through the 24-hour teletype service of the Ohio Bell Telephone Co., are furnished to the maintenance areas three times a day, but storm warnings are transmitted as soon as they are received.

A fourth channel is an administrative radio-telephone channel which connects the eight maintenance areas with eleven stations at the Berea administration building.

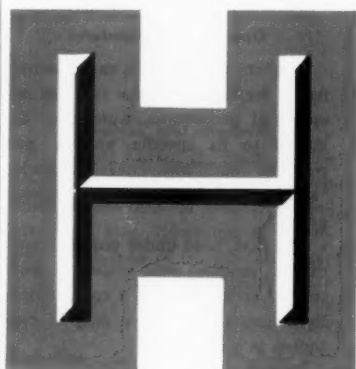
The fifth channel is the communications maintenance circuit. This connects the radio equipment rooms in the administration building with those in each maintenance building. This is a channel operating independently of the others, and it is used by the maintenance personnel of the RCA Service Co.

Both the Eastern and Western Divisions group four stations of the microwave system and operate independently. At Berea, the Central Radio Control Room keeps in constant touch with operations of both divisions. If necessary, both divisions can be bridged together. Automatic double-track tape recorders, located in the Control Room, monitor all transmissions and prepare a permanent record of all voice communications.

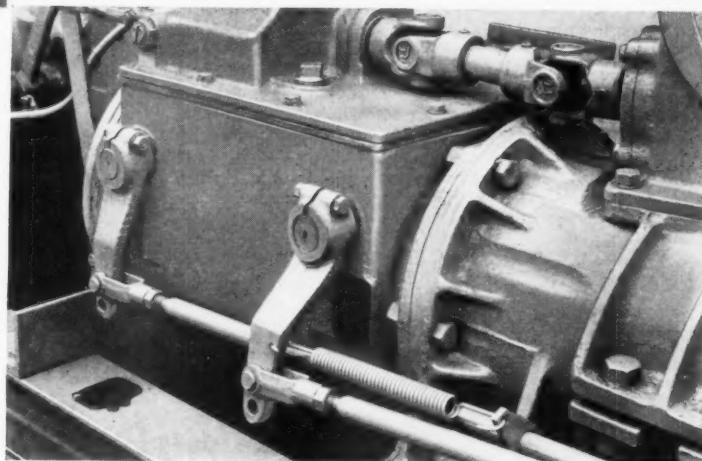
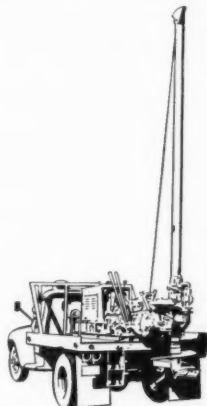
Snow fighting

The two divisions, headed by division superintendents, are broken down into four sections, each headed by a maintenance foreman. Each section covers a stretch of about 30 miles of the highway. About 18 men are assigned to each section and, during emergency storm operations, they are divided into two groups, A and B. These groups have the round-the-

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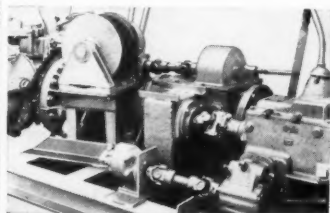


IGHWAY



Adjustable Clutch

NEW! 50% MORE DIGGING POWER



Capstan Winch takes power directly from the transmission and allows all speeds of transmission to be used.



A Division of
Merritt-Chapman & Scott Corp.

HIGHWAY HCAMS Skid-Mounted Digger
with new adjustable clutch and capstan winch

The new Highway adjustable clutch handles a maximum size 36" auger to a depth of 10 feet with more speed and more power. Easy field adjustment saves you costly down-time and shop maintenance. Stronger shift shafts give 45% more pressure on the clutch without increasing control pressure.

The HCAMS is a complete unit with engine, clutch and transmission. It power levels in any direction. Integral winch and derrick or telescopic derrick, with 4500-lb. rated capacity, and hydraulic controls are optional.

UTILITY DIVISION
HIGHWAY TRAILER COMPANY
HEADQUARTERS: EDGERTON, WISCONSIN

Manufacturers of: Public Utility Bodies • Earth-Boring Machines • Pole and Cable Reel Trailers • Winches • Power Take-Offs • Service Accessories • Commercial Trailers • Trailerized Tanks and Dry-Bulk Haulers

SALES AND SERVICE IN PRINCIPAL CITIES

For more facts, use Request Card at page 18 and circle No. 271

A Tractomotive front-end loader charges a Ford spreader truck at one of the chemical stockpiles. Stockpiles are at the eight maintenance areas and nine intermediate spots to cut down the distance trucks have to travel for loads.



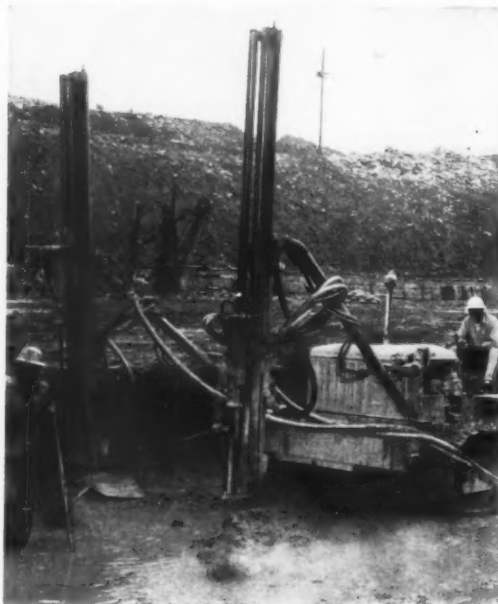
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LOCKWALLS • 38 FT. STRAIGHT UP

Line drilled with Brunner & Lay Rok-Bits



Brunner & Lay carbide ROK-BITS. Body types—cross, chisel, "X", cutaway, taper-socket. In standard wagon drill and hand held drill threads, also —600; 400; 200 series and J-7.50 thread. Bit sizes up to 6½-in. in our Hole-Master.



The new \$10 million lock on the Mississippi River in Iowa called for pin-point drilling to remove 96,000 ft. of face rock. Twin wagon drills equipped with 2¼" Brunner & Lay Rok-Bits line drilled 6' holes on 3½" centers in the 1,200 x 110 ft. lock. The rock web was then broached to separate the rock to be removed from the wall that remained. For details on this and other difficult, low-cost Rok-Bit blast hole drilled jobs, call our nearest plant. Ask for NEW catalog #756. Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill. Plants & warehouses—Philadelphia, Asheville, Birmingham, Dallas, Denver, Los Angeles, Portland, Ore., Montreal.

Brunner & Lay Products

CARBIDE ROK-BITS • INTRA-SET STEEL • DRILL RODS • COUPLINGS, ADAPTERS & EXTENSION STEEL
PNEUMATIC TOOL ACCESSORIES • MOIL POINTS, CLAY SPADES, ASPHALT CUTTERS, ETC.

For more facts, use Request Card at page 18 and circle No. 272

clock responsibility of maintaining the 30-mile sections.

Operational procedures

To carry out its work, each maintenance section uses three types of operational procedures, which are designed to fit specific weather and roadway conditions. These are labeled "standard", "patrol", and "emergency".

The first, used under ordinary conditions, requires each section to work its full crew during the regular daylight hours. At night, only a custodian is on duty.

The second, or patrol procedure, is brought into play when weather forecasts indicate the possibility of snow or freezing rain during the night. In this case, each section assigns equipment operators to maintain patrol duties on a round-the-clock basis. One operator patrols each section in a radio-equipped hopper-body truck which, depending on the weather, carries a full hopper of either salt or treated abrasives. With the start of any snow or icing conditions, the patrol truck radios the maintenance

garage immediately and directs the custodian to notify the foreman and the crew. This done, the patrol truck proceeds to treat the pavement areas with the load on hand.

The last procedure is an emergency one, used when weather forecasts or actual storm conditions indicate that snow fighting will have to be continued over a long period of time. In this case, the maintenance section assigns half its personnel to a second or night shift. The men so assigned are then released by the foreman and instructed to return at the start of the new shift. Throughout the re-



One of the section foremen calls a maintenance area from his Ford 1/2-ton pickup with an RCA Carfone-150 radio.

mainder of the day, only half the section crew works. These two crews are designated A and B, and each takes a turn performing night duty every other week.

During snow storms, one hopper truck equipped with a plow is assigned to an interchange, and one truck is assigned to each pair of service areas. These trucks do not require radios, since there are radios in the toll booths and public telephones in the service plazas.

Coordinating work of equipment

One of the principal items of snow-fighting equipment, operated by the commission and directed via the radio system, are 42 Ford 2-ton trucks equipped with front-end plows and with hoppers and spreaders for spreading abrasives and chemicals. In addition, there are 14 Oshkosh 5-ton trucks with front-end and wing plows. These are also equipped with hoppers and spreaders. Six Chevrolet 2-ton trucks carry front-end plows, together with hoppers and spreaders, and two Marmon-Herrington 5-ton trucks are equipped with spreaders and right and left-hand plows. Eight Gallon motor graders



Hoosier Tarpaulins covering pre-stressed concrete at the IBM Electric Typewriter factory, Lexington, Kentucky.

IBM Electric Typewriters move quick as a wink....

and so do Hoosier Tarps, from factory to you! Phone us and your order is shipped the same day from the world's largest stock . . . 25,000 of them. Whatever you want . . . canvas, nylon, plastic or paper --- any size, any quantity - comes to you F A S T !

Write for special contractors' Price List No. JD-1 or phone COLLECT—MEIrose 2-9451, Indianapolis.

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Hoosier

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Attn: Robert T. Goldberg,
Vice-President-Sales

CONTRACTORS AND ENGINEERS

Abrasives treated with calcium chloride are spread on a plowed roadway by a Ford 2-ton spreader truck. The quantity of the material, as well as the type, depends on weather and roadway conditions listed in a basic emergency guide. ▶



A Galion motor grader with a V-type plow moves out from a maintenance area to clear snow made slushy after a storm. Blading and chemical applications will be continued until the roadway is clear.

are also available for crews.

There are also many front-end loaders—including Hough Payloaders and Tractomotives—to handle the loading of abrasives and chemicals at the various stockpiles scattered along the turnpike.

Chemicals and abrasives

In a single winter, the maintenance forces combat icy pavements with about 50,000 tons of abrasives consisting of slag, limestone, and cinders; 4,000 tons of calcium chloride;

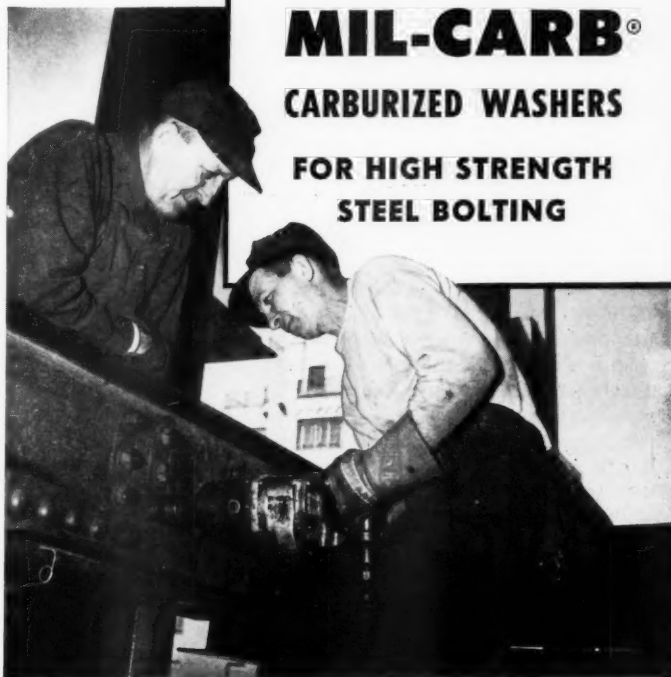
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WHY MORE AND MORE CONTRACTORS SPECIFY

MIL-CARB® CARBURIZED WASHERS

FOR HIGH STRENGTH STEEL BOLTING

• Photo courtesy
Russell, Burdick
& Ward Bolt and
Nut Co.



Contractors know a nut and bolt assembly is only as strong as its washers. That's why in high strength structural steel bolting, quality-conscious consulting engineers and contractors demand washers that match the best nut-and-bolt assemblies in...

1. High tensile strength
2. Holding power
3. Uniformity

On all three counts, Mil-Carb Carburized Washers fill the bill best—developed specifically by the world's largest producer of washers to meet the needs of modern structural steel jointing.

Mil-Carb Washers are fabricated from prime carburizing quality special soundness steel to insure strength to equal or exceed the rigid specifications of ASTM designation A-325.

Maximum holding power is assured by a closely supervised carburizing process which retains inner ductility of the metal,

yet provides an exceptionally hard "outer skin". It's this tough "outer skin" which permits torquing nuts to specification maximums without danger of "galling" or grinding of the washer... imperative for permanent, uniformly strong, tight joints!

In addition, Mil-Carb Washers are uniformly flat and smooth with dimensions conforming to current requirements for heavy plain washers (carburized) of the American Standards Association (ASA Designation: B27.2).

For permanently strong, tight joints that become integral parts of the steel structure... as permanent as the steel itself... specify Mil-Carb Carburized Washers. Available in six sizes, from 5/8" to 1 3/4", packed in 200-lb. kegs.

Distributed by Leading Bolt and Nut Manufacturers and

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208 South La Salle St. • Chicago 4, Illinois

WROUGHT WASHER MANUFACTURING CO.
The World's Largest Producer of Washers
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Don't Delay Jobs Because of Cold...

Clayton SUMMAIRE
Keeps Jobs Moving

UP TO 375,000 BTU'S

Make Your Own Climate; Keep Equipment and Materials Moving

Avoid costly delays caused by cold weather; frozen materials and equipment. The Clayton SUMMAIRE portable space heater provides made-to-order climate—safe, controlled and economical. Summaire protects concrete against freezing while curing, heats semi-enclosed working areas, insures fast starting of power equipment.

SAFE, ODORLESS HEAT AT LOW COST

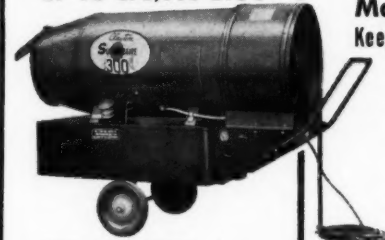
TWO SIZES; FOUR MODELS TO MEET EVERY NEED

Series "300" models are available with either electric or gasoline engine drive; with or without thermostatic flame control for maintaining pre-set temperatures. Series "120" units provide a highly efficient medium capacity heater. All have outstanding safety features; enclosed, baffled combustion chambers to eliminate open flame hazards; automatic fuel shut-off in the event of flame or power failure; odorless operation with no carbon monoxide release. Ask for prices and complete details.

CLAYTON MANUFACTURING CO.
Box 550, El Monte, Calif.

() Send complete Summaire literature.
() Name of nearest dealer who will demonstrate.

NAME _____
ADDRESS _____
CITY _____ STATE _____



SERIES "300" MODEL
Capacity: 320,000 to 375,000 BTU's per hr. Fuel tank capacity, 25 gals.; sufficient for 10 hrs. continuous operation.

SERIES "120" MODEL
Output: 120,000 BTU's per hr.; 950 cu. ft. heated air per minute. Burns less than 1 gal. low cost fuel per hr.



For more facts, use coupon, or Request Card at page 18 and circle No. 274

OCTOBER, 1957

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(Continued from preceding page)

and 7,000 tons of rock salt. This material is stockpiled at each of the maintenance areas and at nine intermediate locations. The latter are generally at interchanges so that the materials can be delivered easily, and to reduce the distance spreaders have to travel to be refilled.

Guide to operation

To determine action during snow-fighting operations, the maintenance sections use a basic guide, which takes into account variable factors and reduces the weather to a set of four conditions. Each condition calls for a specific treatment:

CONDITION No. 1: The temperature is 25 degrees F or above and rising, and snow, sleet, or freezing rain is falling to make the pavement wet.

TREATMENT: Salt or a salt-calcium chloride mixture, at a rate of 400 pounds per mile, is applied immediately.

Subsequently, if snow continues and begins to accumulate, the roadways are plowed to within 1/4 inch of the pavement while the salting is repeated. If freezing rain or sleet continues, treated abrasives are applied at a rate of 1 cubic yard per mile. If the storm ceases, the patrol is maintained until the pavement is clear and dry.

CONDITION No. 2: The temperature is 25 degrees or below and falling, the pavement is dry, and a dry snow is falling.

TREATMENT: Plowing is done as soon as is practical, by two vehicles in tandem with alternate left and right-hand plows. Salt or treated abrasives are not applied.

After the immediate treatment, plowing is continued and the road patrolled to check for wet, packed, or icy spots.

CONDITION No. 3: The temperature is 25 degrees or below and falling, and the pavement is wet or sticky with snow or freezing rain.

TREATMENT: A salt-calcium chloride mixture (1/2 calcium chloride and 1/2 salt) is applied to the road at a rate of 400 pounds per mile.

If the snowfall continues, plowing is done and the application of the chemical mixture repeated. If freezing rain continues, treated abrasives are applied at the rate of 1 cubic yard per mile. Abrasives are treated by the addition of 100 pounds of calcium chloride per cubic yard of abrasives.

CONDITION No. 4: The temperature stands at 10 degrees or below while snow or freezing rain is falling and there is an accumulation of packed snow or thick ice on the roadway.

TREATMENT: An application of treated abrasives is made at a rate of 1 cubic yard per mile.

When snow or ice becomes slushy, it is removed by plows and blades. Blading and the chemical application are continued until the pavement is clear.

Turnpike maintenance crews are already gearing up for the 1957-58 season on the road. Before long, some 40,000 feet of snow fence will be

placed at strategic locations along the right-of-way. Equipment will be given winter servicing and checkups in preparation for the job ahead. But coordinating the movements of this maintenance fleet would be virtually impossible without the radio setup on the pike. It has become almost indispensable in giving the traveling public what it has come to expect: trouble-free and safe driving conditions—no matter what the weather.

Personnel

Russell S. Deetz, the deputy executive director of the Ohio Turnpike Commission, and L. G. Byrd,

maintenance engineer, are responsible for the year-round maintenance of the toll road. James W. Shocknessy is the chairman of the turnpike commission. **THE END**

Appoint service head for Omark division

Omark Industries, Inc., Portland, Oreg., has announced the appointment of Art Gredler as service manager for the company's Fastening Division. He will establish and head a new service department and organize training programs at the firm's Portland factory and Cincinnati warehouse.

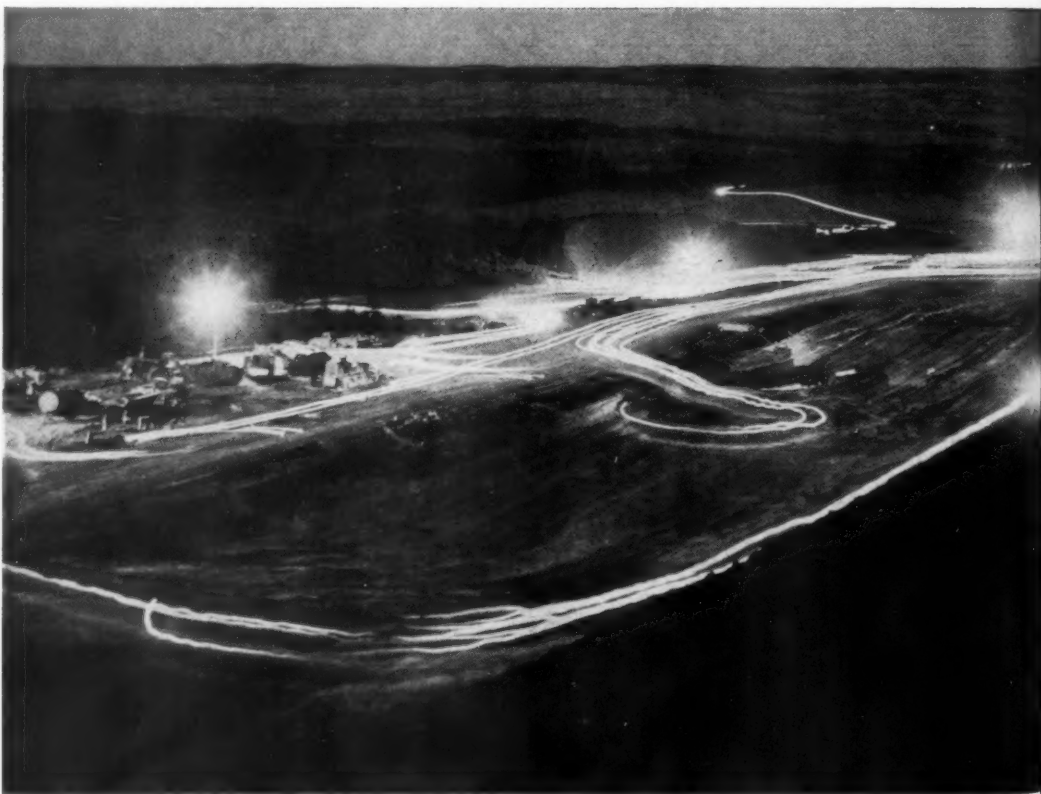
Boundaries and the law subject of new book

Legal principles controlling the boundary location of real property are discussed in "Boundary Control and Legal Principles", by Curtis M. Brown, instructor at the San Diego Junior College and Vocational School. The book is published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

After delineating the systems used to describe property, the author goes on to treat the transfer of real property, locating metes and bounds conveyances, sectionalized land systems,

Three reasons why

Contractors on the Air Force Academy Project use STANDARD fuels and lubricating oils



Night shift. \$715,000 worth of Paul Hooper, Inc., equipment moved 4.5 million cubic yards of dirt at the rate of 25,000 cubic yards every 24 hours. Leveling site for academic building area included fills of up to 100 feet.

Here are three reasons why prime and sub-contractors on the \$128 million Air Force Academy project, near Colorado Springs, use STANDARD gasolines and diesel fuels plus STANOLUBE S-1 Motor Oil and other lubricants. (1) To serve contractors, Standard Oil maintains storage facilities for 82,000 gallons of petroleum products at the construction site. There's no time lost waiting for deliveries on this job. (2) Technical service on fuel and lubricants is provided contractors by experienced, qualified Standard Oil men. (3) When they buy from Standard, contractors know they are getting top quality products.

Men and machines moved seven million yards of dirt on this 17-square-mile site during 1956. Work on all phases of construction continues at top speed this year. Grading, utilities, arterial roads, sewer lines, water mains, portable water reservoirs and utility buildings are well on the way to completion. This is the sort of big construction that requires the "big" service Standard Oil gives contractor customers. Maybe you would like service such as this on your job. You can get it anywhere in the 15 Midwest and Rocky Mountain states. Call your nearest Standard Office, or write Standard Oil Company, 910 S. Michigan Avenue, Chicago 80, Illinois.

CONTRACTORS AND ENGINEERS

riparian and littoral owners, the surveyor and his duties, and other subjects.

The book is priced at \$7.50, and is designed especially for surveyors and title engineers.

Student engineers get railroading experience

"I've been workin' on the railroad"—that was the theme song for 18 student engineers who gave railroading a try this summer before making a definite choice of a career. This student engineering training program of the Baltimore & Ohio Rail-

road was instituted last year by the railroad's chief engineer maintenance C. R. Riley and is designed to give student engineers a brief course in what engineering means to a railroad maintenance of way department.

Each of the students, assigned to a different division or region on the B&O, worked with the division engineer or the engineer maintenance of way on that particular stretch of road. Each student attended an accelerated course on how the principles of engineering are applied to the maintenance of the B&O's right-of-way.



Two tarpaulin-covered hot-air enclosures house areas for post-tensioning concrete girders and beams for the new plant of the Electric Typewriter Division, International Business Machines Corp.

Tarps aid post-tensioning job during winter weather

Full speed ahead on erecting post-tensioned concrete girders and beams for a new plant, during bad winter weather, was possible with the aid of 350 Hoosier canvas tarpaulins. Three large buildings make up the new plant of the Electric Typewriter Division of International Business Machines Corp., Lexington, Ky. The prime contractor on the job used 20x20-foot tarps to speed curing of the post-tensioned girders and beams.

The tarps were fastened together, to form a mammoth canvas cover over a framework of lumber and span all the trusses. Hot air was then blown into the enclosure, and over each newly poured unit. More than 20,000 cubic yards of concrete were used in pouring the prestressed-concrete members.

Book discusses uses of glass in plastics

The forms, properties, chemistry, and applications of glass-reinforced plastics are treated in a new, revised edition of "Glass-Reinforced Plastics", published by the Philosophical Library, 15 E. 40th St., New York 16, N. Y. The book is edited by Phillip Morgan.

The book is largely, as in the original edition, concerned with the facts on glass and resins, the fabrication system employed in producing glass-reinforced plastics, and some problems of specialized application.

A chapter on miscellaneous applications discusses the use of these plastics in the manufacture of building sheeting, reinforced-concrete forms, prestressing rods, road signs, and various materials used in the heavy construction field.

The book is priced at \$15.

HRB bulletin reports on aerial survey of roads

Bulletin 157, "Photogrammetry and Aerial Surveys", is a symposium of seven papers on the use of aerial surveys and photogrammetry in highway location and design. Seven pages of general discussion of the papers concludes the bulletin, which is available for \$1 from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

For more facts, circle No. 276

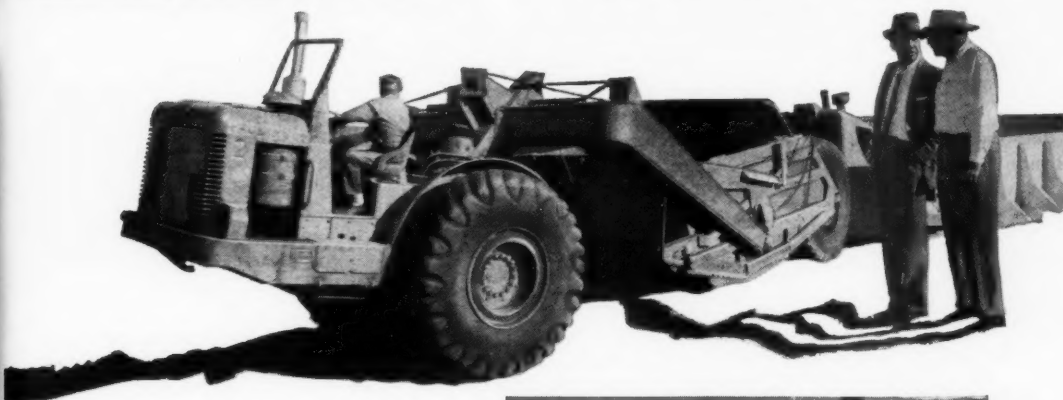


Lubrication specifications are reviewed by A. R. Gaunt (left), general superintendent of Long Construction, and Standard Oil man, Ralph Dunn. Long Construction has contract for construction of 10,000 lineal feet of concrete retaining walls. Helping contractors with lubrication is a job for which Ralph Dunn is well suited. He has been doing such work for 12 years. Ralph is a graduate of Colorado State College. He has completed the Standard Oil Company Sales Engineering School.



Nowers Construction Company is building 14 miles of primary highways. Here, Nowers Construction's president, Roy G. Nowers, and Ralph Dunn discuss lubrication of Nowers' earth moving equipment.

Despite the severe working conditions, Paul Hooper Construction, Inc., has experienced no mechanical failures due to lubrication. J. L. Phillips, general superintendent for Hooper, welcomes technical service on lubrication from Standard's Ralph Dunn.



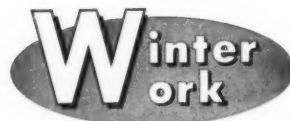
Clifford C. Smith, co-owner and general manager of Smith-Nesbitt, and Standard's Ralph Dunn inspect part of sewer, electrical, water, steam and gas lines laid by Mr. Smith's company.



STANDARD OIL COMPANY
(Indiana)



Test methods by South Dakota highway department prove
that contractors can have a 12-month construction season



Insulated forms keep concrete construction active through winter

by K. R. SCURR, bridge engineer
South Dakota State Highway Commission

TREMENDOUS RIPPING TEAM



The tremendous power of the IH TD14, TD18 or TD24, plus the 10,000-pound Greenville tractor-mounted rock ripper shatter rock and packed earth for easy scraper loading. On many jobs explosives, shovels and trucks are eliminated.

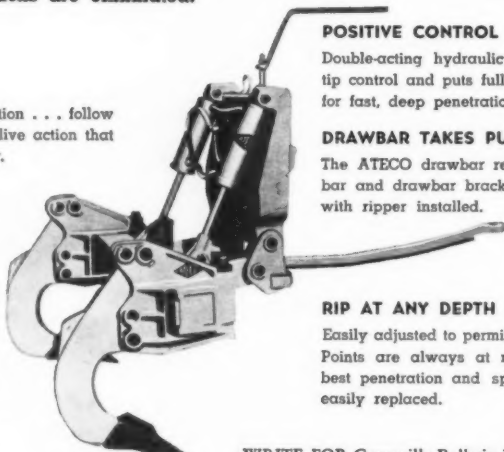
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WRITE FOR Greenville Bulletin IH-156. It gives complete data on the Greenville-Ateco ripper.



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STEEL CAR COMPANY

ATECO DIVISION
Greenville, Pennsylvania

For more facts, use Request Card at page 18 and circle No. 277

The use of various types of insulated forms for protecting fresh concrete poured in sub-freezing temperatures is not new; but the pressures of modern construction programs are such that a search for better insulating materials and better techniques for their economical use is of constantly increasing importance.

In the most northerly third of the United States, methods must be devised which will permit uninterrupted concrete construction to be carried on economically throughout the winter months, thereby creating a 12-month construction season instead of a 7-month season. One of the methods by which this can be accomplished is by using heated enclosures. This method is satisfactory, but expensive, and introduces a fire hazard. Insulated forms, which hold the initial heat of the mixture and the heat generated during the process of hydration, offer safe and efficient methods for carrying out winter construction.

South Dakota's work

South Dakota, located in a region handicapped by a short construction season, has arrived at a satisfactory solution to the problem of winter concrete curing. The method consists of using concrete introduced into forms that are insulated by double balsam or equivalent blankets at a temperature of about 65 degrees F. The original temperature is obtained by heating water and/or aggregates in conformity with ACI specifications.

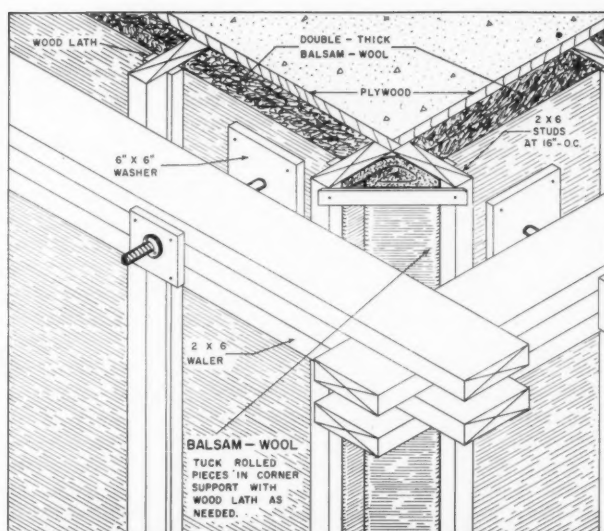
The first major project on which the balsam-wool blanket insulated forms were used by South Dakota was on a \$1¼ million foundation contract for the substructure of a highway bridge at Chamberlain. About half a mile downstream another agency had awarded a foundation contract for a railroad bridge with piers the same height as those of the highway bridge.

The same contractor was the successful bidder on both contracts and construction proceeded concurrently during the winter of 1952-1953. On the railroad bridge, a conventional heated enclosure was used. Later, the contractor elected to take advantage of insulated forms on the highway bridge. But the supervising authority on the railroad project required the firm to use the heated enclosures.

CONTRACTORS AND ENGINEERS

This sketch illustrates the method of applying insulating blankets for the highway bridge at Chamberlain, S. Dak.

Good quality concrete work at any month of the year and at any temperature—and at a cost that is within reason—is something that a number of contractors may find difficult to believe. But tests with insulated forms of various types are pointing the way to a 12-month season for concrete construction. Some of the South Dakota projects on which these insulated forms were used successfully may prove the prototypes of winter concrete jobs in future years.



Concrete pouring

In applying insulating blankets to the highway bridge, the contractor drove a 1-inch bolt through the form into each pour of concrete. After the initial set, the bolt was removed and a thermometer was inserted to record the heat changes. Check temperatures, taken inside the insulation but outside the form, were 6 to 8 degrees lower than the inside temperatures.

Each successive lift was poured on a previous lift or base which had attained outside temperatures. A 12-inch blanket flap overlapped the construction joint to minimize heat loss, but no attempt was made to preheat the surface. An enclosure protecting workmen was supported on the dowel bars projecting into the next lift. Heat from a propane heater was blown into the enclosure while the concrete was being placed and finished. This was the only artificial heat used.

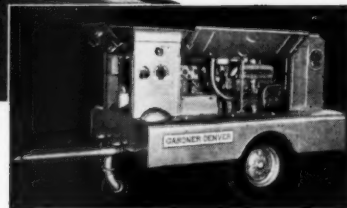
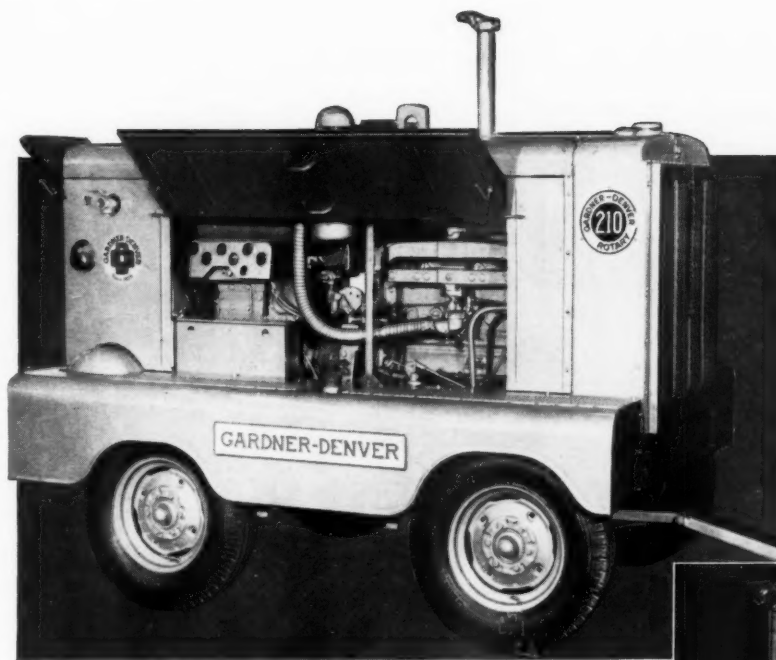
Six bags of cement were used per cubic yard with no additives to obtain a 4,000-psi concrete.

Constructing the enclosure for the housed and heated bridge was approximately 20 per cent higher than the cost of insulating the forms for the highway bridge. The cost of fuel, equipment, and watchmen must be added to the original cost of the heated enclosure; none of these costs were applicable to the insulated forms. The average cost of insulating the forms for the highway bridge piers was approximately \$3.00 per cubic yard of concrete protected for the first set of forms. Most of the form panels were reused three times without removing the insulation.

Overall costs of protection by insulation was about \$2.00 per cubic yard of concrete, as compared with approximately \$8.00 per cubic yard for protection of concrete enclosed and heated. This high unit cost is attributed to the height of the pier, which did not affect the cost of insulation to the same extent.

On the railroad structure, the heated enclosures resulted in two fires which destroyed enclosures and forms and may have caused some surface damage to the concrete. One man was killed in attempting to bring the enclosure fire, at a height of 65 feet, under control.

(Continued on next page)



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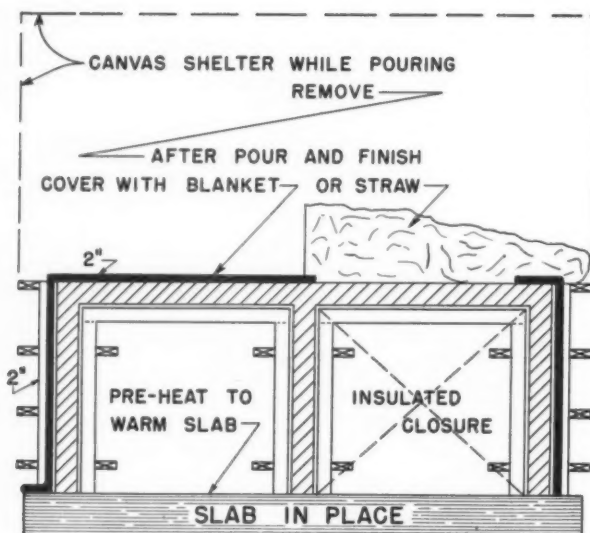
Gardner-Denver Company, Quincy, Illinois

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MODEL RP210 SPECIFICATIONS

Mounting	With Diesel Engine		With Gasoline Engine	
	Two-wheel	Four-wheel	Two-wheel	Four-wheel
Delivery, cfm	210	210	210	210
Operating pressure, psi	100	100	100	100
Length	12' with drawbar	102"	12' with drawbar	102"
Width	67 1/4"	65 1/4"	67 1/4"	65 1/4"
Height	6'3"	6'2"	6'3"	6'2"
Track width	57 1/2"	54"	57 1/2"	54"
Net weight, dry	4800#	5000#	4700#	4900#

For more facts, use Request Card at page 18 and circle No. 278



The top slab of the Bad River Bridge is protected by straw or balsam blanket cover.

(Continued from preceding page)

Temperature ranges

Concrete was introduced into the forms at an average temperature of 60 degrees F with outside temperatures of 20 degrees F. The heat generated during the process raised the temperatures inside the forms to approximately 100 degrees F on the fourth day, and thereafter a practically uniform loss of 5½ degrees F per day continued for 11 days. Outside temperatures varied between 20 and minus 16 degrees F. At the end of 16 days, the temperature inside the forms was still 40 degrees F.

Test cylinders cured inside of the

insulation next to the forms followed normal strength curves. The method had no real effect of any kind on the cost or quality of finishing, since no fine finishing is required on work of this type, except on the top surface which was finished as it was poured, and final dressing of the vertical surfaces must be done after a pier is completed.

Concrete slabs on girders

Another equally important application of insulation is retaining the heat of hydration in constructing thin slabs on structural steel girders. In such cases complete reliance has not been placed on using the heat of hydration. Because of larger exposed areas, because of the thin section formed on one side only, and the fact that the steel girder conducts cold to the slab, undesirable low temperatures are created above the girder flange. In such instances insulation has been used in conjunction with external heat.

This technique was used in constructing the Bad River Bridge at Fort Pierre. In this instance, the insulation retained the inadequate internal heat and minimized the requirement for external heat. A substantial economy resulted from this type of operation.

A canvas working enclosure, protecting the slab and personnel during concrete-placing and finishing operations, was removed on the third day after a heavy layer of straw covered the entire surface. External heat was introduced through the ducts formed by the insulation between the girders to preheat the cold girders. The heat was transferred to the enclosure above when concrete placing began. No direct heat was applied under the sidewalk.

A maximum temperature of 90 degrees was attained on the first day with a drop to about 35 degrees F on the sixth day. Since no external heat could directly reach this slab, it indicates that no external heat need be supplied to protect a slab as thin as five inches, if other means could prevent cold conductance through the steel girders.

Culvert construction

The thin walls and slabs of concrete box culverts can be adequately protected by insulated outside forms that have closures at each end. A minimum amount of heat is introduced through the closure into the barrel for one day to counteract the effect of the cold bottom slab which is poured at an earlier date under conventional protection conditions. The top slab, after finishing under a heated enclosure, is protected by straw or balsam blanket cover.

A gain of about 25 degrees F can be expected on the second day if concrete is introduced into the forms at 60 to 65 degrees F. Thereafter, a loss at the rate of about 9 degrees F per day can be expected. This is approxi-



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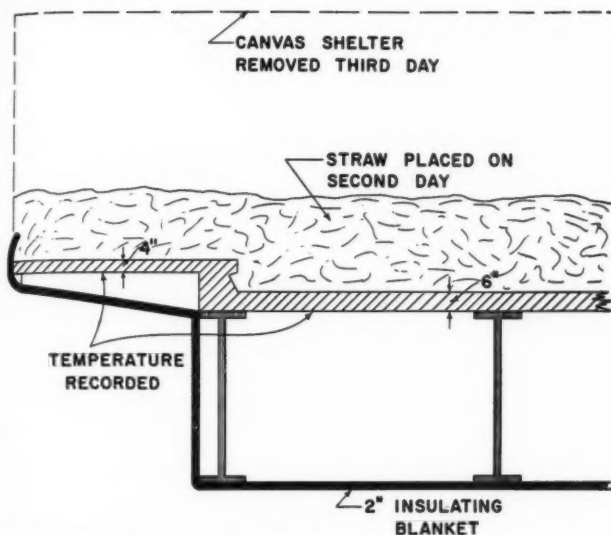
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For more facts, use Request Card at page 18 and circle No. 279



Insulation used in conjunction with external heat can be viewed in this diagram of the Bad River Bridge at Fort Pierre, S. Dak.

mately the same for all sizes of culverts. The larger culverts have greater exposed areas contributing to the loss of heat, but this is offset by the thicker slabs with greater capacity for generating and holding heat.

Insulation advantages

It is true that the cost per cubic yard of protecting thin slabs or small columns is greater than for more massive construction. Insulated forms seem to be gaining in favor over heated enclosures, since the unit cost of housing and heating small volumes of concrete increases even more rapidly than the costs of insulating forms.

In every case, test cylinders cured under the same conditions as the protected concrete showed no departure from a normal curve of strength attainment during the periods of protection.

All evidence points toward the conclusion that improved insulating materials and techniques have given South Dakota the means for producing quality concrete any month of the year at any temperature, without a prohibitive price penalty. This will permit the contractor to approach 12-month efficient employment of his plant and personnel. THE END

(From a paper presented at a Highway Research Board Meeting.)

ASTM book covers highway and roofing materials

"Bituminous Materials for Highway Construction, Waterproofing, and Roofing" is available from the American Society for Testing Materials, 1916 Race St., Philadelphia, Pa. The book includes specifications, test methods, recommended practices, and definitions of terms pertaining to bituminous materials. Also covered in the book are creosote, sieves, and thermometers.

There are 112 ASTM standards in the compilation, 17 of which are new or revised since the previous edition. This 448-page sixth edition contains numerous diagrams, tables, charts, and formulas.

The book is available from the ASTM at \$3.50 to members and \$4.75 to non-members.

Civil Service revises, reissues exam notices

The U. S. Civil Service Commission has revised and reissued the announcement of the currently open examinations for engineers. Examinations for various specialized branches of engineering are now incorporated under one announcement; these were formerly publicized under separate announcements.

Engineering positions to be filled are in various fields of work and pay from \$4,480 to \$11,610 annually. They are located in various federal agencies in Washington, D. C., and throughout the United States, and

in foreign countries. To qualify, applicants must show appropriate education or experience in engineering. A written test for certain positions is required of applicants who do not meet the requirements for a degree in engineering. Applications will be accepted from students who expect to complete the required study within nine months.

Information on examinations and application forms may be obtained from most post offices or from the U. S. Civil Service Commission, Washington 25, D. C.

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Winter work

The job of keeping traffic moving on the New Jersey Turnpike—perhaps the most heavily traveled toll road in the country—is complicated in any season. But the job reaches its height of activity when the full fury of winter strikes. With a radio setup tying three divisions to headquarters where snow-fighting operations are controlled, and with weather information supplied periodically from several sources, maintenance crews perform the snow-fighting and the mopping-up operations effectively and methodically.

Radio directs snow fight operation on N. J. pike

Work of three maintenance districts supervised from headquarters, but responsibility for keeping roads open lies with each district

The length of the New Jersey Turnpike—131½ miles—and the heavy volume of traffic on the superhighway and its Pennsylvania and Newark Bay extensions make a well coordinated winter maintenance setup mandatory for the road.

Maintenance operations are dovetailed by radio, which channels workmen and equipment to the most needed areas during severe storms. For maintenance purposes the toll road is broken down into three divisions—northern, central and southern. The northern division takes in milepost 91 to milepost 118, including the Newark Bay-Hudson County extension; the central division, milepost 50 to milepost 91, including the 6-mile Pennsylvania Turnpike connection; and the southern division, the stretch from Deepwater to milepost 50. Each division in turn is further broken down into two districts which have specific responsibilities for a 15 to 28-mile stretch of roadway under a maintenance foreman.

About 120 RCA two-frequency Carphone mobile radios are in use during the winter months to tie the turnpike maintenance, patrol, and administrative functions together. At present there are seven maintenance areas along the length of the turnpike, with each acting as a base station of the microwave radio network. These base stations are located at Swedesboro, Moorestown, Heightstown (the equipment headquarters), Milltown, Elizabeth, Jersey City, and Secaucus. An eighth station, now under construction at Crosswicks will be completed early in 1958.

Communications center

The communications center is located in the State Police office in the turnpike's administration building in New Brunswick. At this nerve center, which is manned by the State Police, is a radio console for transmitting and receiving; a direct radio-telephone line to the State Police headquarters at West Trenton and to the Pennsylvania Turnpike Commission office in Harrisburg, Pa. There is also a radio-telephone hook-up with the maintenance areas on the turnpike, the State Police substations at Moorestown and Newark, and the Heightstown and Pennsylvania Turnpike interchanges. A teletype service (PWX) is also used to

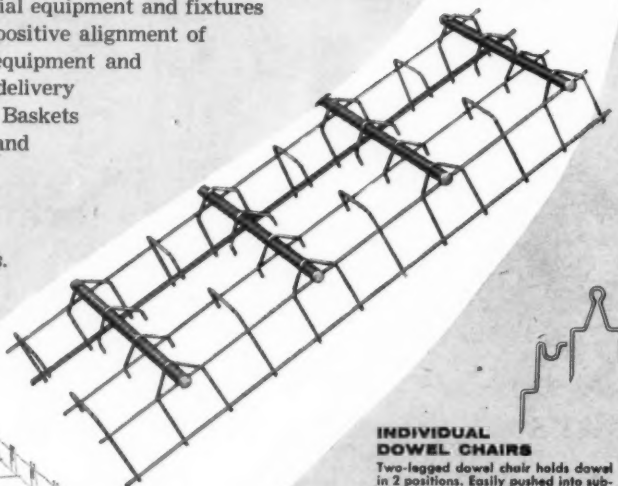
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DOWEL BASKET ASSEMBLIES

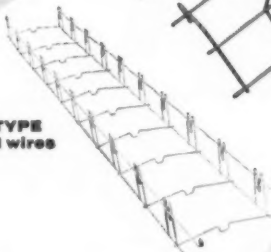
Universal Dowel Basket Assemblies are designed and fabricated to specifications. Special equipment and fixtures guarantee accurate spacing and positive alignment of dowels. High speed production equipment and modern facilities insure prompt delivery of your requirements. Universal Baskets are approved by Federal, State and private authorities for highway and airport construction.

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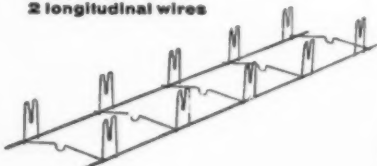
HEAVY DUTY TYPE Maximum strength and support



STANDARD TYPE 4 longitudinal wires



STANDARD TYPE 2 longitudinal wires



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connect the communication center to the State Police at West Trenton; to the Pennsylvania Turnpike; to the other PWX police stations, which have the service throughout the country; and to the North East Weather Service, which supplies weather data and forecasts. All the radio equipment, whether it be the mobile sets or the 150-foot-high microwave towers, was manufactured and installed by the Radio Corporation of America. The company, under a service contract, is responsible for the 24-hour maintenance of all radio equipment.

Weather reports and forecasts are furnished to the Turnpike Authority by the U. S. Weather Bureau office at West Trenton, through the State Police. Additional data is obtained from the North East Weather Service, Philadelphia International Airport, and Newark Airport. This information is disseminated to the various divisions and districts of the turnpike by radio and radio-telephone.

The responsibility for snow removal, ice control and general maintenance is placed directly in each district. State Police, patrolling the turnpike, report by radio to the maintenance divisions informing them of existing roadway conditions. During the winter months a standby force of maintenance workers is available for night duty at the various districts at all times. As soon as a maintenance foreman is alerted of a snowfall in his district, he is responsible for calling out his crew at any time if conditions become severe.

During snow-fighting operations, cooperation between the State Police and the maintenance divisions is more pronounced than ever. The police constantly report any conditions requiring attention. A standby crew of wreckers is available at certain toll plazas during storms to help motorists start or move their vehicles and to prevent tie-ups on the turnpike. The work of this crew is particularly important because snow-fighting equipment would be hampered if disabled vehicles blocked the road.

Snow and ice removal

The removal of snow and the de-icing of all pavement sections constitute, in winter, the most important phases of work carried out by the maintenance sections. Snow removal starts as soon as 2 inches of snow falls and continues until the storm has stopped. Each maintenance district goes over its stretch every 1 to 1½ hours in order to keep the maximum thickness of snow on the roadway down to 2 inches.

After the roadway has been plowed, trucks spread salt to melt the thin coating of ice left by the plows. Then plowing is repeated until the storm ceases. Afterward, snow that has accumulated at the sides of the roadway and the approaches is removed by snowplows, overhead and bucket loaders, and dump trucks.

Salt, calcium chloride, and sand, used as the chemicals and abrasive,

are spread by truck spreaders. These materials are stockpiled at the various maintenance areas and during winter months they can be loaded into trucks for immediate use. Each maintenance district is equipped with a number of snow-fighting rigs. Typical of a roster are seven to nine Ford Model 600 trucks, all with snowplows, and two having dump bodies while the remainder have salt spreaders. Also included are three to five International Model L-192 or Model R-192 trucks, all equipped with snowplows and salt spreaders, and two Eagle or Oliver loaders.

In addition, specialized snow-fighting equipment is held in reserve at

the central equipment shop to be used in areas severely hit by a storm. This fleet includes four Walters Snow-Fighters, 1957 Model ACBL; three Sicard snow-blowers, and five FWD trucks.

Col. R. L. Dean, the engineer of maintenance, has the job of supervising all maintenance functions on the length of the turnpike. During bad storms, the work of the three divisions is coordinated by Col. Dean, who generally remains at the turnpike headquarters in New Brunswick. From this vantage point, and by the use of radio, he can tell instantly which sections are being hit harder than others and require more assist-

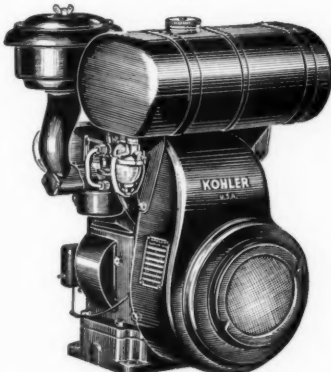
ance. He has the sole authority to order equipment from one division to an adjoining division.

Personnel

Officers of the snow-fighting forces of the New Jersey Turnpike are Col. R. L. Dean, the engineer of maintenance; E. R. Ricker, the traffic and safety engineer; Capt. C. W. Hanna, State Police; H. W. Goldberger, assistant engineer of maintenance; Kenneth Seavey, master mechanic; Paul Strickler, superintendent of the northern division; Sam Horsfall, superintendent of the central division; and David Jones, the superintendent of the southern division. THE END



K90



K160



K330



K660

KOHLER Co. Established 1873 KOHLER, Wis.

KOHLER OF KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS • AIR-COOLED ENGINES • PRECISION CONTROLS

For more facts, use Request Card at page 18 and circle No. 282

manufacturer memos

Byron A. Haney, the Northwestern sales manager for the Bucyrus-Erie Co.



B-E appointments

Byron A. Haney has been appointed Northwestern sales manager for the Bucyrus-Erie Co., South Milwaukee, Wis. From headquarters in Seattle,

Wash., Haney will be responsible for sales of Bucyrus-Erie products in Washington, Oregon, Idaho, and Montana, the Territory of Alaska, and the Yukon Territory.

Now serving as assistant sales manager for large machines and blast hole drills produced by Bucyrus-Erie is Robert P. Brooks. The former northwestern sales manager at Seattle, Wash., is now working out of the South Milwaukee, Wis., home office of the company.

Brooks has been with B-E since 1946.

Timken names Bessmer new vice president

Members of the board of directors of the Timken Roller Bearing Co.,

Canton, Ohio, have elected Dwight A. Bessmer executive vice president of the firm. His duties will include general administrative supervision of all plants and offices of the company.

Bessmer has been associated with Timken since 1933. He served successively as service engineer, sales engineer, director of purchases, assistant to the president, and vice president.

I-H elects McCormick executive vice president

A 17-year veteran with the International Harvester Co., Brooks McCormick, has been made executive vice president of the firm. He succeeds Christian E. Jarchow, who retired after 43 years' service. Jarchow will continue on the board of directors.

McCormick joined the firm in 1940, served as a salesman, and assistant general superintendent of the Melrose Park Works, Melrose Park, Ill., before becoming general superintendent at the plant. He later served as joint managing director of International Harvester Co. of Great Britain, Ltd., as managing director of the British subsidiary company, and as director of manufacturing of the parent company.

M-H-F appoints general manager

The appointment of Charles J. Davis as general manager of its new Industrial Division has been announced by Massey-Harris-Ferguson, Inc., Racine, Wis.

President of Mid-Western Industries, Inc., until that firm and its operations were purchased earlier this year by M-H-F, Davis developed, produced, and marketed a line of Davis products which included backhoes, loaders, and the Pit-Bull.

Headquarters of the new Industrial Division is at Wichita, Kans.

Two promotions made by Caterpillar

Caterpillar Tractor Co. has two new earthmoving representatives—Joseph M. Johnson and Emil E. Grob.

Johnson, serving the firm's Southwest sales division, will act as a consultant on earthmoving projects in Nevada, Utah, Arizona, California, and Hawaii. Before his promotion, he was a product specialist in the sales development division at the home plant in Peoria.

Grob, who will serve dealers in Virginia, Maryland, and North Carolina, was formerly a junior engineer employed in the sales development division at Peoria.

Gar Wood personnel news

A 10-year veteran with Gar Wood Industries, Wayne, Mich., A. Phillip D'Haem, has been made director of export sales for the firm. Before his present appointment, D'Haem was European director of sales for the firm, with headquarters in Paris.

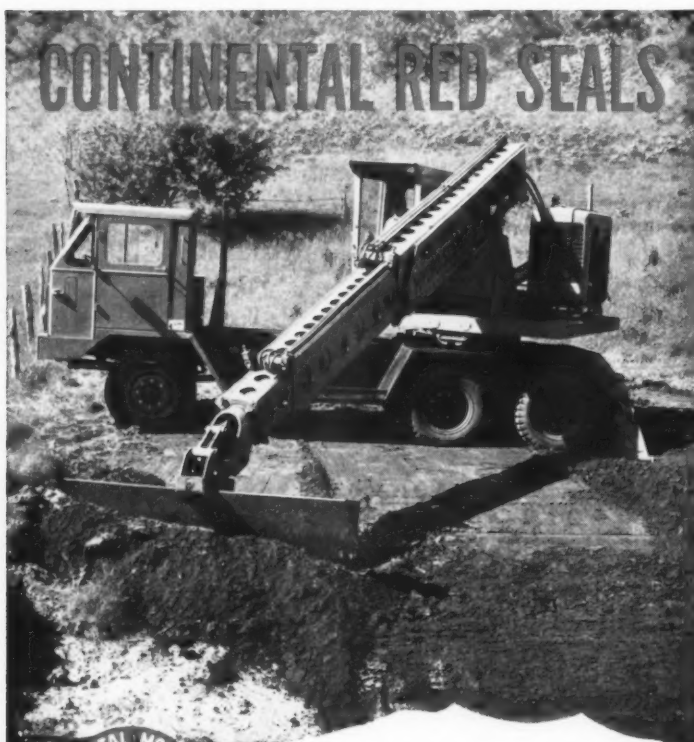
Ray Nymberg, Gar Wood export manager, will specialize in truck equipment and maintain liaison with truck manufacturers.

Ed Smallman has been appointed a tractor equipment district manager. He will make his headquarters at the company's Findlay Division in Findlay, Ohio.

Weather Corp. appoints Iaccheo vice president

Armand R. Iaccheo has been appointed vice president of the Weather Corp. of America, St. Louis, Mo. Formerly manager of the firm's Eastern division, Iaccheo will now be in charge of all technical operations.

Before joining the company, he was a special service meteorologist for the U. S. Weather Bureau.



...are Engineered to Fit the Job

You find Red Seals on the job, wherever there's a job to be done—in excavating, ditching, concrete ripping, grading, building, and all phases of road construction. You find them powering the equipment of manufacturers who recognize the importance of the "engineered for the job" features, and the day-in, day-out dependability of Continental Red Seal engines and power units. . . . The Badger Machine Company's Model 360 Hydro-Scopic Hopto, shown above, is powered by a Continental Red Seal Model B427. This installation is another fine example of expert matching of the engine to the rest of the machine. It's wise, when buying equipment of this type, to choose a make with Red Seal power. You get an engine which is not only tailored to the job, but backed by specialized experience dating from 1902.

SERVICE FACILITIES AND GENUINE RED SEAL PARTS ARE AVAILABLE EVERYWHERE

WORLD'S LEADING INDEPENDENT MANUFACTURER OF INTERNAL COMBUSTION ENGINES, CONTINENTAL MOTORS OPERATES PLANTS IN ATLANTA, DALLAS, DETROIT, MILWAUKEE, MUSKEGON, AND TOLEDO, AND IN ST. THOMAS, ONT., PRODUCING AIR-COOLED AND LIQUID-COOLED ENGINES FOR USE ON LAND, AT SEA AND IN THE AIR.

Continental Motors Corporation
MUSKEGON • MICHIGAN

For more facts, use Request Card at page 18 and circle No. 283

"2 KRANE KARs HANDLE ALL OUR MAINTENANCE, REPAIRS, and STORAGE," says CHARLES PRETSCH, Master Mechanic, SLATTERY CONTRACTING CO.

"The KRANE KARs Assemble and Disassemble equipment at Maspeth yards . . . buckets and shovels, tractor treads, graders, bulldozers, crane booms, backhoes, etc. Load and Unload trucks and trailers, recently loaded out 60 tons of wide flanged beams on one job alone. Stack and Store material in yard, and carry parts to shops, positioning them for repairs. We find KRANE KAR more economical for this type of work."

**ALL-HYDRAULIC
SILENT HOIST
KRANE KAR**
SWING-BOOM MOBILE CRANE

1000 TO 25,000 LBS. CAPACITY

FLUID DRIVE POWER STEERING

Sold and serviced by Responsible, Well-Equipped Distributors throughout the World

SILENT HOIST & CRANE CO.
Pioneer Mfrs. of Heavy Duty Materials-Handling Equipment
898 A 63rd ST., BROOKLYN 20, N.Y.

For more facts, use Request Card at page 18 and circle No. 284

CONTRACTORS AND ENGINEERS



THE YALE TRADEMARK of the Yale & Towne Mfg. Co., Philadelphia, Pa., now appears on the Trojan line of tractor-shovels made at Batavia, N. Y., by the Contractors Machinery Division, which Yale & Towne acquired earlier this year. Standing before the improved, 2-cubic-yard-capacity Trojan Model 154 are Frederick W. Allan, founder of Contractors Machinery Co., and now consulting design engineer for Yale & Towne; his son, Robert G. Allan, general manager of the division; and Frederick W. Allan, Jr., comptroller of the division.

Changes in officials made by Standard Steel

A number of executive changes have been made at Standard Steel Corp. of Los Angeles, Calif., and Decatur, Ill.

Walter J. Kalmeyer, vice president in charge of manufacturing, has been appointed to the board of directors. Robert R. Johnson, vice president and general manager of Leader Iron Works Division, Decatur, has been elected a vice president of Standard Steel. Norman Pitt, chief engineer, is

also a director. The new secretary of the corporation is Clay C. Hopper, assistant general manager.

K. G. Thies, sales manager, is contract administrator, and Webb L. Nimick, general sales manager in charge of the process equipment and special fabrication division. Wesley V. Davidson, assistant sales manager of the road machinery division, has been advanced to general sales manager of the division.

Every takes post for Cummins in Scotland

Paul J. Every is working at his new job as managing director of the Cummins Engine Co., Inc., subsidiary in Shotts, Lanarkshire, Scotland.

A ten-year veteran with Cummins, Every had been general sales manager at the parent plant at Columbus, Indiana, before his present appointment. The subsidiary, formed in Oc-

tober, 1956, has been producing diesel engines.

Charles E. Martin has been appointed general service manager and a member of the executive committee of the Cummins Engine Co., Inc., Columbus, Ind. As general service manager, Martin assumes over-all responsibility for the firm's service division.

Atlas Copco Eastern names district manager

Donald Jenkins has been made Southeastern district manager for Atlas Copco Eastern, Inc., Paterson, N. J. Jenkins, who will make his headquarters in Knoxville, Tenn., succeeds Duane A. Houkom, now sales manager of the company's Stationary Compressor Division.

Technical directors for American Cyanamid

Dr. W. A. Raimond is the new technical director of the Engineering and Construction Division, and Dr. Glenn S. Watson, technical director of the Organic Chemicals Division of the American Cyanamid Co., New York.

Dr. Raimond has been with the company since 1942, and Dr. Watson since 1936.

White Mfg. appoints two

Donald D. Morgan and James E. McKinstry have been made sales manager and manager of engineering development, respectively, of the White Mfg. Co., Elkhart, Ind. Morgan will establish a more aggressive dealer organization on all four major lines of White products—asphalt plants and dryers, asphalt heating kettles and torches, concrete vibrators and grinders, and concrete trowelers and finishers.

McKinstry will be primarily responsible for adding to the firm's present line of products.

NEW SPEED RECORD!

Calweld digs 12 caissons a day

and bells the bottoms!

860 foundation holes 24" dia. by 20' deep with 2½' to 6' bells...

AT 1/3 THE COST of constructing conventional spread footings, six Calweld Earth Drills recently dug 860 holes for drilled-in-place caissons—at speeds up to 12 complete caissons per rig per day! Hitting a record smashing day's rate of 74 completed drilled-in-place caissons, the six rugged Calweld rigs rang up 641 completions in only 14 days!

Performing under adverse conditions, frequently in frozen ground, the Calweld Earth Drills dug 20-foot holes 24 inches in diameter...belled the bottoms from 2½ to 6 feet...placed reinforcing steel cages in all holes...placed steel casings in 25% of the holes...and pulled the casings after concrete was poured.

This outstanding performance is typical of what Calweld Earth Drills can do for you. They can drill any size hole from 10" to 10' in dia. to a depth of 200'.

Write for factual job report "Earth Borers Dig Caisson Holes!"

CALWELD bucket type EARTH DRILLS

CALWELD, INC.
7222 East Slauson Ave.,
Los Angeles 22, Calif.

MOBILE AND MANEUVERABLE
DRILLS 10" to 120" HOLES
200 FEET DEEP

LOWELL REVERSIBLE WRENCHES WORK FAST

Wrench efficiency is measured by speed and dependability. Time studies prove that reversible ratchet wrenches cut costs by their fast action. Always ready for quality performance are Lowell wrenches. Their high tensile handles, heat-treated steel pawls, and all-steel caps insure greater strength and safety.

SERIES 50 SOCKET WRENCHES

Formerly Steel Socket Bridge and Red Socket Wrenches



Series 50—Socket type wrench

The socket allows the bolt to pass through, and is reversible by flipping the "trigger" near the socket. Handles from 8" to 60"; square or hex sockets up to 9½".

Series 40—Gear type wrench

The flat gear, hole-thru type, is made for heavy duty. It is reversed by a "trigger" near the gear. Handles from 24" to 48"; square or hex gears from ¾" to 4½".

Series 20—Gear type wrench

Especially popular with machine tool builders, it has the reversing knob at the end of the handle. Modern appearance, and heavy duty. Handles from 7" to 36"; square or hex gears from ¼" to 2½".

SERIES 40 GEAR WRENCHES

Formerly "Red Face" Bridge Builders' Wrenches



SERIES 20 WRENCHES

Formerly 1916 Pattern



For Complete Information—Ask Your Distributor
Or Send For Descriptive Folder L-12

LOWELL WRENCH CO.
WORCESTER 8, MASS.



L-12

For more facts, use Request Card at page 18 and circle No. 285

For more facts, use Request Card at page 18 and circle No. 286

As road specifications change, pavers have to change—or disappear; developments being made in curing, joint sawing, automatic batching

Concrete paving through the years

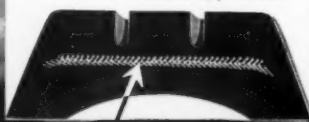
This is the last in a series of seven feature articles each complete in itself, on various aspects of roadbuilding. The articles were written specially for the ROAD SHOW DAILY, published by CONTRACTORS AND ENGINEERS magazine during the 1957 Road Show. They are being reprinted here, by request, for those who missed the Road Show. Each of the articles was written by a key figure in the roadbuilding industry.

Keep the job GOING with exclusive SAFETY **STEEL** SHIELD*



SEE these thousands of flexible steel cords between tread and Super Royal body. They form a Safety Shield, invulnerable to cuts and ruptures in the tread area for original and extra recap life!

*Patent applied for.



U. S. ROYAL *Super* FLEETMASTER

For graders, scrapers, heavy off-the-road equipment—

U.S. ROYAL CON-TRAK-TOR



● Triple Impact Protection—added rubber between plies, double shock-pads, extra-tough construction at the crown.

● Full-Lug Traction—massive beefed-up lugs extend from shoulder to shoulder, take hold and pull where others slip and spin!

Don't let tire failure hold up your job. Put your trucks on the new U. S. Royal Super Fleetmaster. Its Safety Steel Shield is so immune to hazards that it runs over jagged rocks, even over razor-sharp axblades without losing a pound of air!

This tire's all-new—with money-saving advances throughout its construction. It's all-wheel—built for every on-and-off-the-road truck exposed to heavy impacts in murderous terrain.

Your U. S. Royal Dealer now has the Super Fleetmaster in sizes through 11.00. Call him today—and specify "Super Fleetmaster" when you buy your new equipment!



United States Rubber

Rockefeller Center, New York 20, N. Y.

In Canada: Dominion Rubber Co., Ltd.

See things you never saw before. Visit U. S. Rubber's new Exhibit Hall, Rockefeller Center, N. Y.

For more facts, use Request Card at page 18 and circle No. 287

The development of the paver has an interesting history—especially that concerned with the evolution of sizes. A concrete paver is an end-discharge concrete mixer, mounted on crawlers or wheels and furnishing its own power. This power, in the old days, was steam—and steam was used in some instances as late as 1925 to operate pavers.

In their early history, pavers were mounted on steel wheels which gradually gave way to wooden spoked wheels with hard rubber tires on some of the larger units—later replaced by crawlers. Chute delivery was the original method of placing the concrete on the subgrade. In a very short time the boom and bucket arrangement was developed, and it has almost entirely replaced the chute.

Early paver models

Paver capacities have covered a wide range from the 7-E with its 7-cubic-foot capacity of unmixed material, through the 34-E with its 34 cubic feet of mixed concrete. The manufacture of pavers began about fifty years ago. One of the popular early models had a capacity of 9 cubic feet wet mix or 14 cubic feet dry mix, known as "loose measure", and was equipped with a chute for placing concrete on the subgrade.

Around 1910 the boom and bucket attachment began to be used extensively. Boom and bucket were manually operated. The first great improvement in bucket design came in 1911 when the automatic bucket trip was developed. All buckets at this time opened parallel to the boom, resulting in a windrow of concrete requiring labor to puddle. The new automatic bucket trip and the bucket's spreading action as it traveled along the boom were major factors contributing to the early success and acceptance of the boom and bucket trip attachment.

The year 1919 saw the first use of crawlers on this type of equipment. These were "half tracks" on the discharge end of the paver. The full-length crawlers came into general use in 1920. The automatic water measuring tank also came in about this time.

On November 16, 1923, the Mixer Manufacturers' Bureau of the Associated General Contractors adopted three sizes as standard—the 7-E, 13-E, and the 21-E. These were wet-mix measurements, and this standard replaced the "loose measurements". The gasoline engine also came into use as an alternate for the old reliable steam engine. The 13-E, a popular size, came along in 1924. Then in 1926 the standard 27-E went into production. This size has persisted until today, and although it has not

CONTRACTORS AND ENGINEERS

R. E. BURTON
Assistant Sales Manager
Koehring Co.

A straight line set-up is used in loading aggregate and sand from two batching plants serving a nearby paving train.



been manufactured for a couple of years it still enjoys a wide popularity. The Mixer Manufacturers' Bureau then revised the sizes to 10-E, 13-E and 27-E. In 1931 paver sizes were revised by the Mixer Manufacturers' Bureau to the 13-E and 27-E.

Limitations of the 27-E

One factor which crowded the 27-E into a bottleneck position was new compaction methods for the subgrade. This meant that new fills and grades were ready for concrete slabs without a long wait for settlement, with the result that more paving jobs were let. Contractors also demanded greater production with less cost. Added to the new grades available were new developments in fine grading which made it possible to finish more fine grade to a closer tolerance.

Along with this came the development of batch-hauling units to keep pace with the industry. Better haul roads, and wider shoulders permitting the paver to work outside of the forms, were a contributing factor to the use of larger and faster trucks. This, of course, made it possible to get more aggregate and cement to the paver.

Traffic demands forced a revision of highway specifications—the width increased, the thickness increased, but with the 27-E naturally the linear footage decreased. Thus there was a condition where more miles of work were available but with more cubic yards of concrete per mile.

Three ingenious methods were developed to overcome the single 27-E limited production. The most common, perhaps, was the use of two 27-E independent pavers—one on either side of the road or closely following each other. The one paver poured the base layer, which was struck off for the wire mesh, and the second unit poured the top layer. This setup increased production but it also had its drawbacks in increased costs, such as the cost of two pavers, two operators and two maintenance men, two water lines, two dump men, and more trucks and drivers.

Then the tandem method began to be used. For this setup two pavers were hooked together—the No. 1 unit mixed the aggregate, cement and water approximately one-half of the required time, and then discharged into the skip of the No. 2 unit which completed the mixing cycle. This concentrated the mixer operation and allowed far better control, but did not materially decrease costs. However, this was the actual forerunner of the two-drum paver.

As a further indication of how strongly contractors felt the need

(Continued on next page)

For more facts, circle No. 288.

FOR MANUAL APPLICATION

THIS HARD-FACING ROD	FOR THESE CONDITIONS	FOR THIS EQUIPMENT	APPLI-CATION
VICTORTUBE	Severe abrasion	Ripper and ditcher teeth, dredge cutter blades, posthole augers, oil field tools, pug mill knives	ACETY. AC-DC ELEC.
VICTORTUBE BARE-30-DOWN	Severe abrasion	Agricultural tools	ACETY. ONLY
VICTORTUBE "SPECIAL"	Abrasion, severe impact	Oil field bits, rock bits	ACETY. ONLY
VICTOR TUNGSMOOTH	Thin cutting	Augers, bits, blades, screw conveyors, farm tools	ACETY. AC-DC ELEC.
VICTORITE	Earth abrasion, sliding friction	Farm tools, earthmoving rigs	ACETY. AC-DC ELEC.
TUBE VICTORITE	Abrasion, impact	Plow points and farm tools	ACETY. AC-DC ELEC.
VICTORITE 1	Corrosion, heat, abrasion	Chemical and food machinery, arbors, screw conveyors, soaking pit tongs	ACETY. AC-DC ELEC.
VICTORITE 6	Red heat, impact corrosion, abrasion	Forming dies, exhaust valves, cams, steam valves	ACETY. AC-DC ELEC.
VICTORITE 12	Heat, abrasion, impact	Saw blade inserts and other critical applications	ACETY. AC-DC ELEC.
VICTORITE CARBON ARC	High abrasion, thin deposit	Plowshares, lister shares, sweeps	CARB. ARC ACETY.
VICTORALLOY	Abrasion, severe impact	Crushers, dredge pumps and cutters, dipper teeth, tampers, rollers, idlers	ACETY. AC-DC ELEC.
VICTORALLOY #1	High abrasion, medium impact	Bucket lips, rock crushers, muller tires, gyratories	ACETY. AC-DC ELEC.
VICTORALLOY "A"	Angular shock, extreme impact, build-up	Clutch parts, gears, crusher plates, gyratory mantles, build-up for hardfacing	AC-DC ELEC. ONLY
VICTORALLOY "B"	Heavy impact, moderate abrasion	Tractor rollers and sprockets, shovel pads, plates, idlers, etc.	AC-DC ELEC. ONLY
VICTORALLOY "C"	High abrasion, moderate shock and impact	Tractor grousers, pressure rolls, crusher segments, roll crusher teeth	AC-DC ELEC. ONLY
VICTOR MULTI-PASS	Impact, compression, build-up	Drive sprockets and tumblers, rollers, idlers, churn drills, clutch jaws	AC-DC ELEC.

What's proper Victor rod for your hardfacing needs?

THIS CHART GIVES YOU QUICK ANSWER

Use it to select right rods for prolonging operating life of your equipment. You'll be selecting rods that go on quickly and smoothly, thereby saving labor and downtime. Order from your Victor dealer TODAY.

FREE—For more detailed information on how to apply Victor hardfacing alloys to wearing parts, write us now for your copy of Victor Hardfacing Manual. It's free.

VICTOR EQUIPMENT COMPANY • Alloy Rod & Metal Division
13808 E. Imperial Highway, Norwalk, California Wakita, Oklahoma

VICTOR
for hardfacing

Profitable dealerships open; inquire now!

FOR AUTOMATIC & SEMI-AUTOMATIC APPLICATION

THIS TYPE	FOR THESE CONDITIONS	ON THIS KIND OF EQUIPMENT
#0	High abrasion, medium impact	Crusher rolls, rock crushing equipment
VA #1	Abrasion, medium impact	Crushers, scraper blades
VA #2	Abrasion, impact, Multi-pass application	Steel mill applications, tractor idlers
VA #3	Abrasion, light impact	Mill guides, crushers, dredge bushings
VA #4	Multiple layer build-up	Tractor rollers and idlers, sheave wheels
VA #5	Heavy impact, abrasion	Tractor rollers, idlers, mine car wheels, sheave wheels
VA #6	Medium abrasion, high impact	Crane wheels, drums, roll necks
VA #7	Abrasion, high impact	Build-up for hardfacing, mine car wheels
VA #8	Abrasion, high impact	Roll crushers, scraper and grader blades, tool joints
VT #60	Extreme abrasion	Tool joints, grader blades, scraper blades
Mo-Mn	Manganese build-up	Wherever manganese build-up needed



A 34-E Twinbatch paver dumps concrete in front of a spreader. Reinforcing has been placed on the first lift of concrete.

(Continued from preceding page)

of relieving the paver situation, there is one case on record of a triple hookup—three 27-E pavers tied together in the same fashion as the tandem method. This was done by Hoeffken Bros. of Missouri. The result was about a 20 per cent increase in production, but the costs went up more than proportionately.

Dual-drum paver

Attempts to meet the demand for increased production resulted first in the development of a 27-E dual-drum and a 40-E single-drum paver. The 27-E dual was not large enough to take full advantage of the capacities of the hauling units and the better haul roads, nor did it allow sufficient increase in production. The 40-E was an odd size that did not fit the picture, and these sizes soon disappeared from the scene. They were followed by the 34-E dual-drum paver.

However, all operators were not ready or equipped for this type of high speed 34-E production, and in

1940 it was necessary to develop and produce a 34-E single-drum paver which could be used with the average well organized 27-E outfit. Most 27-E outfits had developed to a point where they could flood a 27-E paver, and so they could then stretch enough to feed and finish a 34-E single-drum paver without having to replace or add any equipment. Or in other words, a 34-E single-drum offered a 25 per cent increase in production with very little increase in cost.

On October 15, 1941, the Mixer Manufacturers' Bureau of the AGC fixed the 27-E single-drum, the 34-E single-drum, and the 34-E two-compartment pavers as the standard sizes. The 27-E is not being made by any manufacturer at the present time, but the 34-E two-compartment paver is being made by each of the major paver manufacturers today.

Paving requirements are again pushing the capacity of the 34-E two-drum pavers. During recent years it has not been uncommon to see two

Batch trucks line up in front of a paving train using two pavers to speed work on a modern highway.



... big D-6 bulldozer loads in just **2 minutes** ...

... on **MILLER**
"OT"-13 DUAL TANDEM
Tilt-Top

Model "OT"-13
tandem \$2,295.00*



... and it takes only **ONE** man to do it!

You get all the speed ... the easiness of Tilt-Top* loading ... combined with the BIG LOAD capacity of a low boy on MILLER'S "OT"-13 dual tandem. Whatever you haul ... dozers, pavers, trenchers, front-end loaders or backhoes, you'll load them faster ... slash between-job-hauling time with a MILLER Tilt-Top! The "OT"-13's over the wheel's platform provides a full 8 ft. width and nearly 17 ft. in length. Independent acting walking beams are mounted on trouble free Timken roller bearings ... minimize jarring on rough ground. Save the cost of slower loading, more cumbersome trailers ... with a Tilt-Top to suit your needs. Several different models from 3 to 13 tons capacity—all provide ONE man TWO minute loading. See these time saving, production boosting Tilt-Tops at your MILLER distributor today!

*F.O.B. Milwaukee
Complete with platform and tires.
Any optional equipment extra.
*Plus 10% Federal Tax

✓ **built best**
✓ **priced best**

See your MILLER distributor or write for FREE literature to:

Miller
Tilt-Top Trailer Inc.

456 S. 92nd St., Milwaukee 14, Wis.

For more facts, use Request Card at page 18 and circle No. 290

CONTRACTORS AND ENGINEERS

Here's the safest
ratchet lever hoist
ever invented!



◀ If overloaded, "safety valve handle" will bend before any other part of hoist fails.

It's the original Coffing Safety Pull, a ratchet lever hoist with dual pawls and ratchet that keep load from slipping. Safety stops prevent spinning out of control and if overloaded, "safety valve handle" will bend before any other part of hoist fails. The $\frac{3}{4}$ -ton model (illustrated) weighs but 14½ lbs.

Roller Chain Safety Pull hoists are available in capacities from $\frac{1}{4}$ to 15 tons. For full details, consult your distributor or write for Bulletin SP.

The exclusive Coffing Safety Hook with spring actuated locking latch designed to shed, not snag, on wires or other objects is available for the $\frac{3}{4}$ -ton, 1½-ton and 3-ton models at slight additional cost.



Coffing Hoist

DIVISION OF DUFF-NORTON COMPANY
810 WALTER STREET DANVILLE, ILLINOIS

Ratchet Hoists, Electric Hoists, Load Binders, Spur Gear Hoists
Ratchet Jacks, Screw Jacks, Hydraulic Jacks, Special Worm Gear Jacks

For more facts, use Request Card at page 18 and circle No. 289



A longitudinal finishing machine makes a pass over the freshly placed concrete in a highway roadbed.

or three 34-E pavers on one job. The most frequently used application is still a single 34-E paver or two 34-E pavers.

Multi-paver operations

The use of more than one paver on a job has been made possible through modern improved equipment at the aggregate and cement batching plants. By changing the batching equipment to fully automatic units, it is now possible to batch quickly enough to supply two or three 34-E dual-drum pavers.

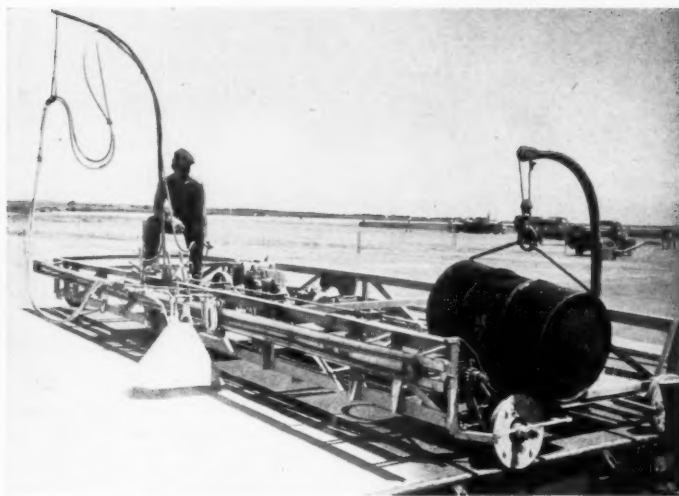
Contractors, requiring speed in concrete production and using dual pavers in their paving trains, are generally consistent in the type of equipment used to make up the train. The lead paver pulls a strike-off to allow proper placing of the welded fabric wire, while the second paver places additional concrete over the reinforcing. This secondary dumping is then spread with a self-propelled spreader, riding on the road forms, to complete the desired slab thickness.

Some contractors vary from this procedure by using two spreaders, one following each of the pavers, eliminating the need for a strike-off.

In either case two transverse finishing machines, self-propelled and riding on forms, generally are found following the second spreader. This has been found necessary in order for the paving train to move smoothly. If two finishers were not used, the one machine would be constantly required to make two passes over the fresh concrete.

It has almost become a standard rule that for every paver used in a paving train there must be a corresponding number of transverse finishing machines. This permits each machine to make only one pass over the freshly poured concrete, and keep up with the fast-moving pavers. A similarity is found between single and dual-paver operation in that only one longitudinal finishing machine is still capable of handling the increased production.

(Continued on next page)



A membrane compound, sprayed on the slab, is a popular curing agent.



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To handle [^]any lifting job...
twelve dependable Duff-Norton
Hy-Power Hydraulic Jacks
capacities 3 to 100 tons

Rugged and dependable, Duff-Norton Hy-Power hydraulic jacks are available in a wide range of sizes for all kinds of lifting jobs—in all types of industries. Manufactured with care from the finest materials, they will function smoothly for many years with a minimum of maintenance. Heads may be brought up to load height quickly, saving the operator's time. For full information on these outstanding jacks, consult your distributor or write the world's oldest and largest manufacturer of lifting jacks, asking for Bulletin AD-16-S.



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3 answers... TO MAINTENANCE WELDING PROBLEMS

MANGANAL FLO-KOTE
(HEAVY COATED, AC-DC)

MANGANAL SPECIAL TITE-KOTE
(LIGHT COATED, AC-DC)

MANGANAL BARE (UNCOATED, DC ONLY)

**11% — 13½% MANGANESE-NICKEL STEEL
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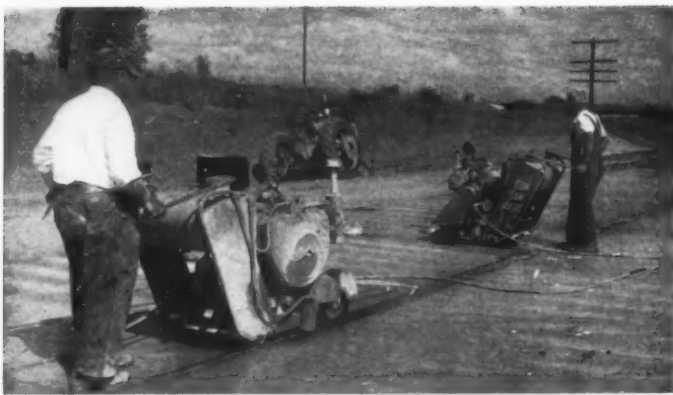
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Write for
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and name of
NEAREST
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OCTOBER, 1957

107



Two concrete joint-sawing machines cut longitudinal and transverse joints in a new roadway.

(Continued from preceding page)

Many developments, brought about by intensive and continuing research, have produced concrete pavements which have greater resistance to the ever-increasing automobile loads. Agents have been developed to produce high-early-strength and air-entrained concrete pavements which have added resistive qualities to the slabs.

Curing the concrete

Compounds have been developed to speed the curing of a concrete pavement by sealing the surface of the slab with a membrane. This helps retain the water in the concrete mix rather than let the water evaporate. Water curing has always been used

and still is, but today the contractor has many other types of curing and concrete-protection techniques at his disposal.

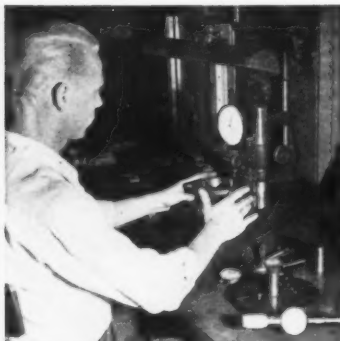
Watertight paper is widely used as a cover over freshly poured concrete slabs. This acts as the membrane compound in retaining the water in the concrete. In the case of the membrane compounds it is sprayed on the concrete as soon as possible. Generally a spraying machine, which also rides the forms at the tail end of the paving train, handles this assignment. A nozzle spray which travels transversely over the pavement applies the compound.

Water is still being used as mentioned before, but to a lesser extent. Two methods are used. Moisture-retaining covers, such as burlap or cotton quilts, are placed over the concrete and kept constantly wet to provide a film of moisture on the concrete surface. The other water-curing method is ponding. This is done by building a small earth dam around the area to be cured, and keeping the area flooded with water.

Concrete joint sawing has also made its mark on the roadbuilding industry, eliminating the hand-built contraction, longitudinal, and expansion joints and thus reducing the cost per linear foot of pavement. Still in an early stage, joint sawing is gaining acceptance in many states. The smooth narrow cut made by a joint saw has little or no effect on the smoothness of the roadway, and it increases the durability of the pavement. There is far less spalling and chipping at the joints, whether longitudinal or transverse. At present nineteen states require joints to be sawed, six make it optional with the contractor under specified conditions, and six more are experimenting with the procedure.



Accurate machining assures the smooth, cool operation of the Wagner Rotary Air Compressor. Close dimensions on all planes of the rotor eliminate vibration... permit compressor blades to function smoothly at high speeds.



Accurate machining and gauge testing of the stator, as well as the rotor, also contributes to the rotary compressor's ability to operate for long periods of time without developing leaks or losing efficiency.



Compressor shafts are given the "cold box" treatment. When exposed to very low temperatures, the shaft diameter contracts. This altered shaft diameter allows proper insertion into a heated rotor to form a strong, composite unit.



Compressor rotors are subjected to high oven temperatures to expand rotor diameters. Shafts and rotors joined together under these extreme conditions resume their original relative size to create an extra strong assembly.



Assembled rotary compressors are hooked up to air lines and operating air pressure is applied for leakage tests. While holding pressure, entire compressor is submerged to determine whether any air is escaping.



Every Wagner Rotary Air Compressor is given a rigorous "run-in" test to determine its resistance to overheating and its overall performance. Running temperatures, vibration, noise and air output are carefully noted and analyzed.

Rigid Quality Control assures uniform, safe performance and efficiency of all WAGNER ROTARY AIR COMPRESSORS

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fast air recovery, long service life, and safer brakes. The vehicles you operate will be safer if they are equipped with Wagner Air Brake Systems—supplied with Wagner Rotary Air Compressors. Complete details on Wagner Air Brake Systems, Rotary Air Compressors, and other Wagner Air Brake Components are contained in Catalog KU-201. Write for your file copy today.



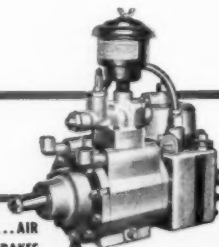
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WATCH For Announcement of



43BE574

NEXT MONTH

BUCYRUS ERIE

For more facts, circle No. 294

CONTRACTORS AND ENGINEERS



Concrete, covered with a double layer of burlap, is kept wet in another type of slab-curing process.

Another important development is the efficient, fast-producing batch plant capable of handling multi-paver operations. This has been done by incorporating automatic devices in the weighing, batching, and mixing cycles of the plant. Batch plants, equipped with automatic electronic controls, have been in use for some time. These plants have eliminated all need for manual control, and have reduced the number of men required to operate the plant. Because of electronically-operated push-buttons, only one operator is needed to weigh the necessary ingredients in a batch and dump the various batches.

Concrete batch plants have increased their production capacities, as well as simplified the many stages of operation by these methods. This feature itself has caused manufacturers of hauling units—batch trucks which transport cement, sand, and aggregate to the pavers—to build bigger and better trucks to handle this increased production. At present contractors are using trucks carrying up to five 34-cubic-foot batches.

Ever since the first concrete pavement was laid in 1893, put down in 5-foot-square blocks resulting in a poorly designed roadway according to our present standards, many developments have been introduced and perfected. This is not only true for the basic material, concrete, but also for the manufacturers who have constantly tried to keep up with the contractors' demand for better equipment to do a better job. What the future has in store is hard to say but of one thing we can be sure. If better equipment and techniques are needed, our contractors and manufacturers will definitely find the answers.

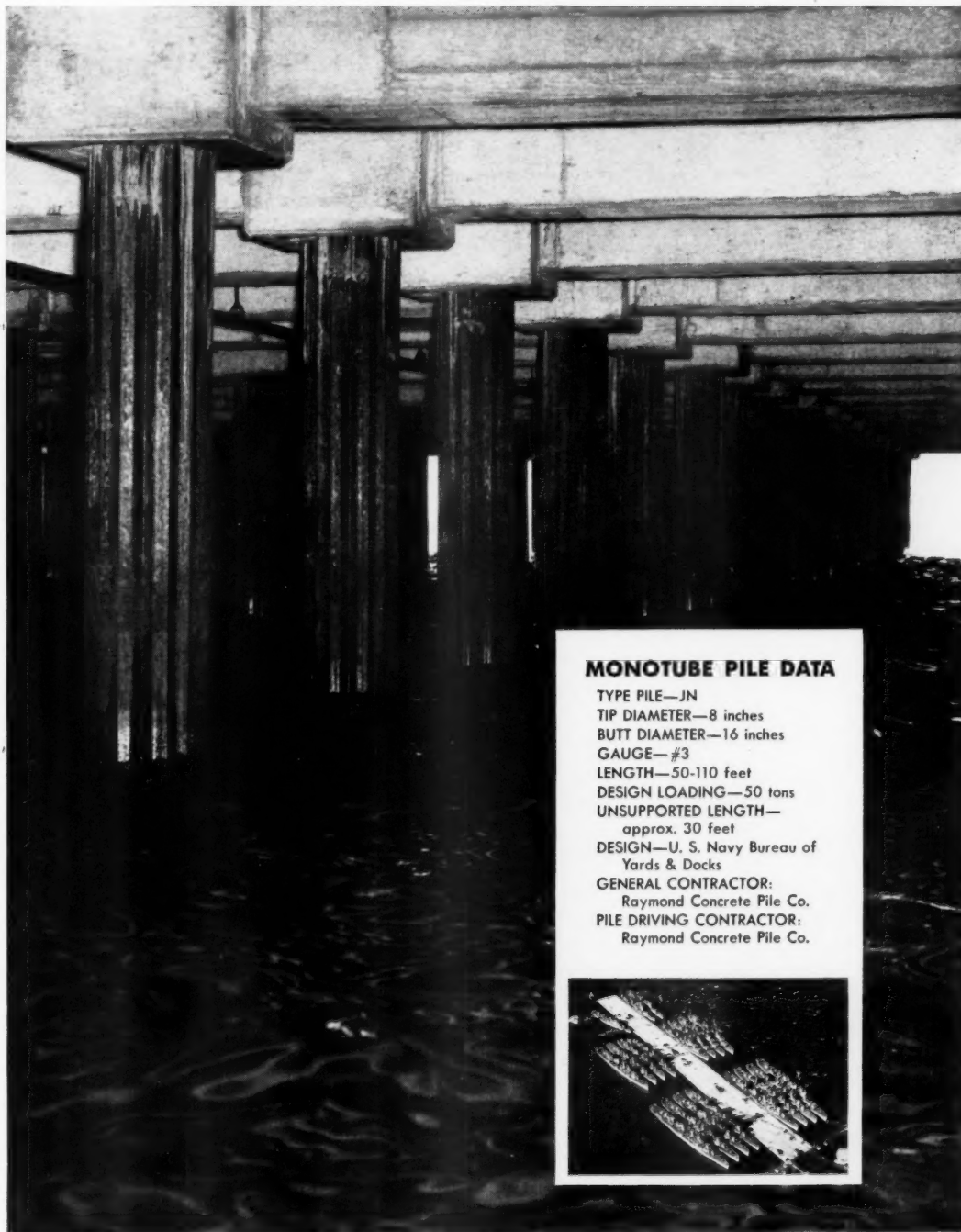
THE END

Eimco appoints Warnock

Denny F. Warnock has been appointed Midwestern sales and service specialist on the Model 105 tractor by the Eimco Corp., Salt Lake City, Utah. From headquarters at Palatine, Ill., Warnock will also direct sales and service on Eimco's dozers and front-end loaders.

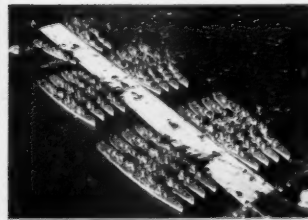
OCTOBER, 1957

"Everyday about two o'clock the boss insists on taking over my job for awhile."



MONOTUBE PILE DATA

TYPE PILE—JN
TIP DIAMETER—8 inches
BUTT DIAMETER—16 inches
GAUGE—#3
LENGTH—50-110 feet
DESIGN LOADING—50 tons
UNSUPPORTED LENGTH—
approx. 30 feet
DESIGN—U. S. Navy Bureau of
Yards & Docks
GENERAL CONTRACTOR:
Raymond Concrete Pile Co.
PILE DRIVING CONTRACTOR:
Raymond Concrete Pile Co.



STABILITY WITH MONOTUBES . . . ideal as piles with long unsupported lengths in pier work. In the construction of the 1,350-foot U.S. Navy berthing pier, Newport, R. I., piles in excess of 100 feet in length were driven in perfect alignment facilitated by the extreme rigidity of Monotubes.

Tapered, fluted Monotube piles are available in lengths, diameters and gauges to meet every requirement. Write The Union Metal Manufacturing Co., Canton 5, Ohio, for complete information.

For more facts, use Request Card at page 18 and circle No. 295

UNION METAL

Monotube Foundation Piles

Avoid legal pitfalls

City could not cancel public works contract

THE PROBLEM: A California city council awarded a public works contract to the lowest bidder, and directed that notice of the award be published, as required by statute. The notice was not published. Four days later, the council, acting on erroneous information that the contractor was

not licensed as required by law, held a special meeting without notifying the contractor, and purported to award the contract to the next low bidder. Was the first contract legally annulled?

THE ANSWER: No. (City of Susanville v. Lee C. Hess Co., 290 Pac. 2d 529, decided by the California Supreme Court.)

The contractor, under California law, could have appealed to the council to reinstate the original award, but it was not bound to do so. When the city brought suit to have the validity of the contract determined, the contractor asserted its right in the suit.

Since there was no fraud on the contractor's part, no mutual mistake, and no other ground for cancellation, a binding contract resulted when the lowest bid was accepted. Municipal authorities have discretionary power to determine what public improvements shall be made, but that function ends with the acceptance of a bid. No option to cancel the bid exists, except for a just cause.

The statutory provision for publication by the city clerk of notice of a contract award was intended for the benefit of affected property owners and not as an exclusive means of notifying the successful bidder.

damage to property, and claims for injury to or death of persons in connection with or growing out of the use of said premises". Did this clause exempt the railroad from liability for the damage done?

THE ANSWER: Yes. (Princemont Construction Corp. v. Baltimore & Ohio Railroad Co., 131 Alt. 2d 877, decided by the District of Columbia Municipal Court of Appeals.)

The court inferred that the clause was intended to exempt the railroad from claims that would not rise except for use of the siding by the construction company in operating the unloader.

Negligent blasting

THE PROBLEM: A highway cut necessitated blasting. Plaintiff's brick house, 1,200 feet away, was damaged by cracking, fences were damaged and his ponds dried up. He sued the contractor for damages. Was there a presumption, which the contractor was bound to overcome, that the blasting was negligently conducted?

THE ANSWER: Yes. (Marlowe Construction Co. v. Jacobs, 302 S. W. 2d 612, decided by the Kentucky Court of Appeals.) In other words, circumstances may be such that damage by blasting may imply that excessive charges were exploded.

Railway sidetrack rights

THE PROBLEM: To facilitate an extensive road-paving job, a construction company secured from a railroad company a one-year permit to install and operate a portable unloader for cement at a sidetrack. While the equipment was unloading a car, a work train struck the car and damaged it. Under the written permit granted by the railroad, the construction company agreed "to assume all liability for any and all loss and

Edited by A. L. H. STREET Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

When contracts may be awarded without bids

THE PROBLEM: The county board in St. Paul, Minn., advertised for bids to construct a jail. A state law required that "goods, materials, or supplies" should be purchased under competitive bids. (1) Did that law require bidding on the jail project? (2) If the board called for bids without being legally required to do so, was it bound to afford all bidders equal opportunity to bid upon the work to be done?

THE ANSWERS: (1) No. (2) Yes. (Griswold v. Ramsey County, 65 N. W. 2d 643, decided by the Minnesota Supreme Court.)

The court decided that a taxpayer was entitled to enjoin award of contracts which reserved right by the

←For more facts, circle No. 296

MORE YARDAGE WITH

YAUN

RUGGED

Dragline Buckets in Light, Medium and Heavy Duty Weights

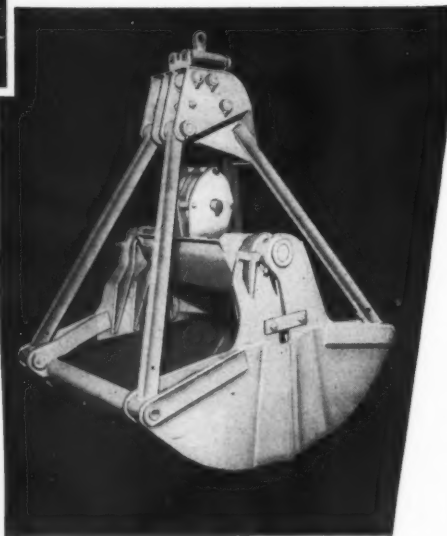
These buckets are BUILT STRONGER, with tubular channel arch, and larger bottom runners and heavier castings than most competitive buckets. They WEAR LONGER, because of manganese steel wearing parts, and because lip surfaces are hard-surfaced. They LOAD FASTER because of the pitch of the lip and hitch plate, which has been field-tested to send the bucket in at the best cutting and loading angle. They DUMP FASTER; perfect balance makes them self-dumping immediately on release. Perforated, basket and shell models.

YAUN Clamshell Buckets For Every Purpose

Choose from conventional-type buckets for rehandling, or for general purpose work, in several weights and sizes. All-welded construction eliminates costly field and shop repairs. Lip edges are surfaced. Smooth welds allow free flow of material in or out.

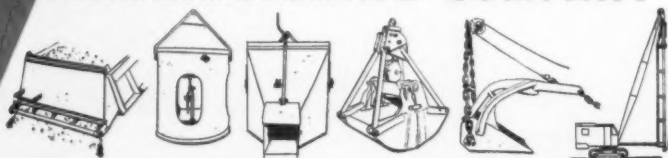
The same features are engineered into the LEVER ARM bucket—fewer moving parts give more speed, less maintenance cost in a light-weight bucket.

Dealerships now available in several key areas.



YAUN

MANUFACTURING COMPANY



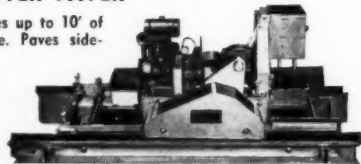
BATON ROUGE, LOUISIANA

These 3 Remarkable Machines!

DO A COMPLETE JOB in one operation!

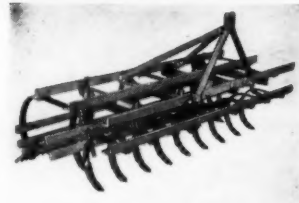
DOTMAR CURB and GUTTER PAVER

Dotmar Curb and Gutter Paver—paves up to 10' of finished curb and gutter per minute. Paves sidewalk too, or integral curb, gutter and sidewalk. Mechanical tamper in front hopper—vibrator on rear hopper. Forward and reverse transmission. Pays for itself in first mile of paving. Hit of the Road Show. Get the facts!



DOTMAR BRUSH & WEED CUTTER

Gear box unconditionally guaranteed. Cuts and chips weeds and brush up to 2" dia. in one operation. Also wheel mounted model.



DOTMAR ROADSIDE SEED BEDDER

Prepares parkway and roadside soil for seeding. Scarifies, grades, harrows, cultivates, levels and rakes in one operation, at one pass.

Makers of Dotmar Air Ace Pneumatic Hammer and Tools

Dotmar INDUSTRIES Inc.

519 HANSELMAN BUILDING

KALAMAZOO, MICHIGAN

For more facts, use Request Card at page 18 and circle No. 297

CONTRACTORS AND ENGINEERS

board to make certain substantial changes in the building and materials to be used after the contract had been awarded.

(1) The court noted that it has been decided by appellate courts throughout the country that a public body need not advertise for bids for construction unless required to do so by statute, charter, or constitutional provision. "Ridiculous and unreasonable" as it may be "to permit any municipal body under ordinary conditions, and in the absence of an emergency, to construct large buildings without advertising for bids, the legislature has seen fit to exempt the two larger counties of the state from such requirement." But it is for the legislature, not the courts, to determine whether bids must be called for.

(2) Having "commendably" called for bids, though not required to do so, the board was bound to so act as to give all contractors an equal opportunity to bid and as to assure taxpayers the best bargain for the least money.

Even if in the particular case there was no showing that the board had acted fraudulently, there was a violation of the purposes of competitive bidding by leaving it open to the board to make material changes in the plans and specifications after the bids had been opened and the contract awarded.

The court found it unnecessary to determine a question that had been presented in the case "whether a public building may validly be built in segments according to the amount of money available."

Truck was not covered by insurance policy

THE PROBLEM: A policy insured an asphalt and quarry company against liability for damages caused in operating its motor vehicles, but excluded coverage of vehicles "while away from premises, owned, rented, or controlled by the named insured." The company was loading liquid asphalt from a railway tank car on a siding into the company tank truck with the aid of a booster when an explosion occurred, blowing out the front of the truck. A man nearby was injured and adjacent property damaged. The place where the loading occurred was at a public team track of the railroad company, and not at an industrial track where the asphalt company had any contractual rights. Did the policy cover the accident?

THE ANSWER: No. (Sam Finley, Inc. v. Standard Accident Insurance Co., 295 S. W. 2d 819, decided by the Tennessee Court of Appeals, Middle Section, Nashville.)

The court said that the place where the accident occurred could not be regarded as under control by the asphalt company merely because the tank trucks went there several times a day, or because the heater and booster used in transferring the asphalt from the tank car to the tank trucks was kept at the railway siding, or because the company's employees started their day's work there.

Surety company's agent unauthorizedly signed bond

THE PROBLEM: A surety company's agent violated instructions when he signed a contractor's bond covering a school building job, but the company did not disavow liability to the school district when the contractor defaulted. On completing the work, was the company entitled to compel the agent to reimburse it?

THE ANSWER: No. (Manufacturers Casualty Insurance Co. v. Martin-Lebreton Insurance Co., 114 Fed. Supp. 515, decided by the United States District Court, Eastern District of Louisiana.)

The court intimated that had the surety company refused to make good the contractor's obligations under the

bond, it would have been liable because it did not immediately notify the school district that the signing was unauthorized. The court also said that, possibly under Louisiana law, the fact that the contract and bond had been recorded would have prevented the surety from denying liability to the school district.

The agent successfully defended the suit; the court deciding that the company waived its right to hold the agent liable by not notifying him that his unauthorized act was disavowed.

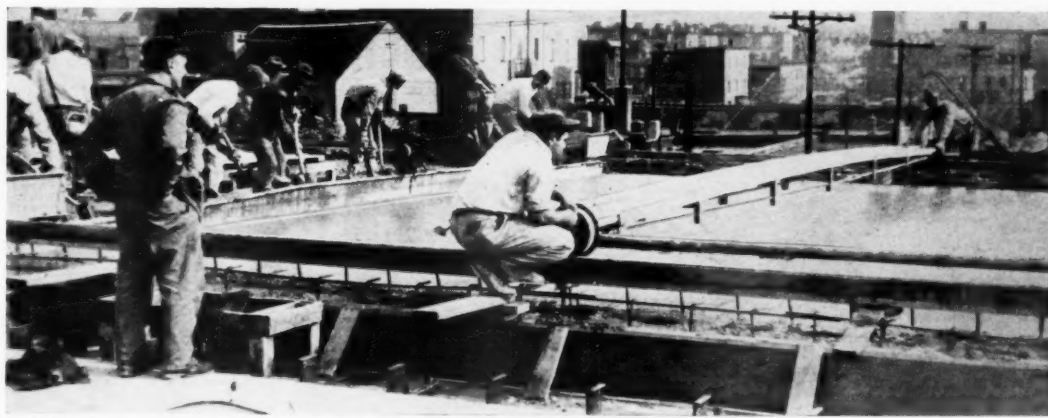
Maintaining sidewalks

THE PROBLEM: A building contractor in Washington, D. C., obtained a permit to build a temporary, enclosed sidewalk while the permanent

sidewalk was barricaded. No covering was specifically required by a municipal regulation, which merely specified that the passageway should be kept free from snow. A pedestrian was injured when she fell upon the snow-covered passageway. Although covering was not "required", could the jury in the pedestrian's damage suit consider that one way that the contractor could have kept the passageway free from snow would have been to provide covering?

THE ANSWER: Yes. (Dougherty v. Chas. H. Tomkins Co., 240 Fed. 2d 34, decided by the United States Court of Appeals, District of Columbia.)

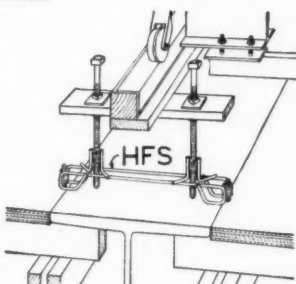
In other words, if the exercise of reasonable care for the safety of people requires safety precaution beyond that imposed by public regula-



Brookfield Construction Company screeds three lanes at once.

Skillful screeding, Richmond supports, pay off in fast, accurate slab finishing

A new screeding technique developed by Brookfield's superintendent, Jack Sorensen, paid off handsomely on this elevated highway extension of the New Jersey Turnpike. An 800-lb., 36-ft., vibrating screed blade was used, with supporting angle-covered 3 x 4's held firmly in place every 7-ft. by Richmond Hanger Frame Screed-Rail Supports. This made it possible to screed three lanes in one operation. Besides gripping the rail with extra firmness, the Richmond bases permitted the heights to be set exactly—from the top—with simple screw-head adjustments.



Brookfield's new technique and insistence on Richmond Screed Supports are typical of the emphasis on proper slab finishing among progressive contractors. Good screeding means a lot more than producing a good looking slab. For, unless the surface is finished without dishes or highspots and with design level maintained, the slab will not drain properly and will not satisfactorily resist weather and wear. In order to maintain levels, screed rails must be accurately positioned and held, so

that they will not move during pouring and finishing. That is why the construction industry is showing such preference for Richmond Screed Supports with their adjustability and extra strength.

Equally important to good screeding, is having rail supports that are exactly suited to the job and to the screeding equipment to be used. The Hanger-Frame type used by Brookfield is only one of the complete line of Richmond Screeds.

In both the Richmond Standard Series and the special Series D supports, there is a wide range of sizes, weights and models. There are Richmond supports for use with hand screeds and vibratory screeds, and adaptable to power equipment. There are also Richmond heads to match any rail, whether pipe, T-bar, or special shape.

Whatever the type or size, all Richmond screeding devices, form brackets, and form and curb bolts provide the extra strength that not only saves money but ensures a better job. A number of the Richmond supports are shown at right. You will find all of them, and all Richmond screeding items, fully described in a new handbook just published—along with the full line of Richmond-engineered concrete tying devices, anchorages, and accessories. For your copy, or for help on any specific type of concreting problem, write: RICHMOND SCREW ANCHOR COMPANY, INC., 816 Liberty Ave., Brooklyn 8, N. Y. or 315 So. Fourth Street, St. Joseph, Mo.



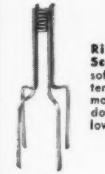
A FEW OF THE MANY TYPES OF RICHMOND SCREED-RAIL SUPPORTS



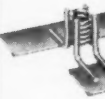
Richmond Adjustable Screed Chairs come in both the Standard ($1\frac{1}{2}$ " dia.) and D ($1\frac{3}{4}$ " dia.) Series. Opposing legs that interlock and cannot spread or bend assure even distribution of load. Two new heights, $7\frac{1}{2}$ " and $10\frac{1}{2}$ ", have been added in the Standard Series. For unusually thick slabs, there are Richmond Special Height Screed Chairs.



Richmond Offset Screed Chairs have built-in support to take cantilevered load when rail must be placed above surface, as, for instance, when reinforcing steel runs opposite to screeding direction. Richmond Offset Screed Head can be quickly adjusted from above with speed wrench; is double-ended for use with either pipe or T-rail.



Richmond Fill-Type Adjustable Screed Base, used when slab is over soft fill, provides stability with four extended legs driven into ground. Richmond Sub-Grade Stake (not shown) does similar job for heavier loads below grade.



Richmond Sub-Grade Base provides 2"-high support with unequal bearing plates. It is used mainly with shorter screed bolts or as base for form bolt. Sub-Grade Chairs (not shown), $3\frac{1}{2}$ " to 18" high, are also available for soft sub-grade fill.



Richmond Form Bracket, can be nailed to a joist to support a screed bolt extending through the decking. May also be used in conjunction with a curb bolt to support and position a curb form. Consists of a $\frac{1}{2}$ " or $\frac{3}{4}$ " coil welded to a steel plate equipped with four nail holes.

avoid legal pitfalls

tion, technical compliance with the regulation will not necessarily exempt a contractor from liability for an accident.

Sales and use taxes

THE PROBLEM: Two construction companies formed a joint venture to execute contracts with a railroad company to eliminate tunnels, straighten tracks, and construct a "Y" and new spur track. The two construction companies formed a third company to hold title to the

construction companies' equipment to be used on the jobs. The third company was to rent the equipment to the construction companies. All three companies were nonresidents. Were Ohio use and sales taxes assessable on account of the rentals paid the third company for use of the equipment?

THE ANSWER: Yes. (Rochez Brothers, Inc., v. Bowers, 143 N. E. 2d 123, decided by the Ohio Supreme Court.) The court rejected contentions that there was an exemption from sales and use taxes under a clause of the Ohio law exempting sales for use by the consumer "directly in the rendition of public-utility service". The contractors could not be regarded as agents of the railroad company in procuring the equipment used for the job.

Contractor must refund amount of overpayment

THE PROBLEM: On a \$110,000 municipal job, the contractor was overpaid \$16,053.14 because of a mutual mistake. Was he bound to return that amount, even if he had over-extended his capital on unsuccessful jobs, believing he was entitled to the sum?

THE ANSWER: Yes. (Town of Bennettsville, S. C., v. Bledsoe, 84 S. E. 2d 554, decided by the South Carolina Supreme Court.)

The court noted that, ordinarily, one who voluntarily makes a payment with full knowledge of all the facts involved is not entitled to reclaim it. But in this case, there was a mutual mistake and the contractor could not justly keep what had been

mistakenly paid him, even if he had changed his position through assuming that the money was rightfully his.

A study of decisions shows that appellate courts have frequently declared the importance of the fact that funds mistakenly paid out belong to the public. In a Minnesota case (Duluth v. McDonnell, 61 Minn. 288, 63 N. W. 727), plaintiff city was adjudged entitled to compel refund of an overpayment resulting from a mistake in measuring pavement.

In an Iowa case, a county was awarded refund of an excessive payment made to a drainage contractor through an erroneous computation made by the county auditor. The Supreme Court said that the general rule that a voluntary payment, not induced by fraud or misrepresentation, cannot be recovered was inapplicable. The court said: "Payments thus made"—of public money—"are not voluntary in the sense that payments made by one individual to another may be." (Pocahontas County v. Katz-Craig Contracting Co., 181 Iowa 1313, 165 N. W. 422.)

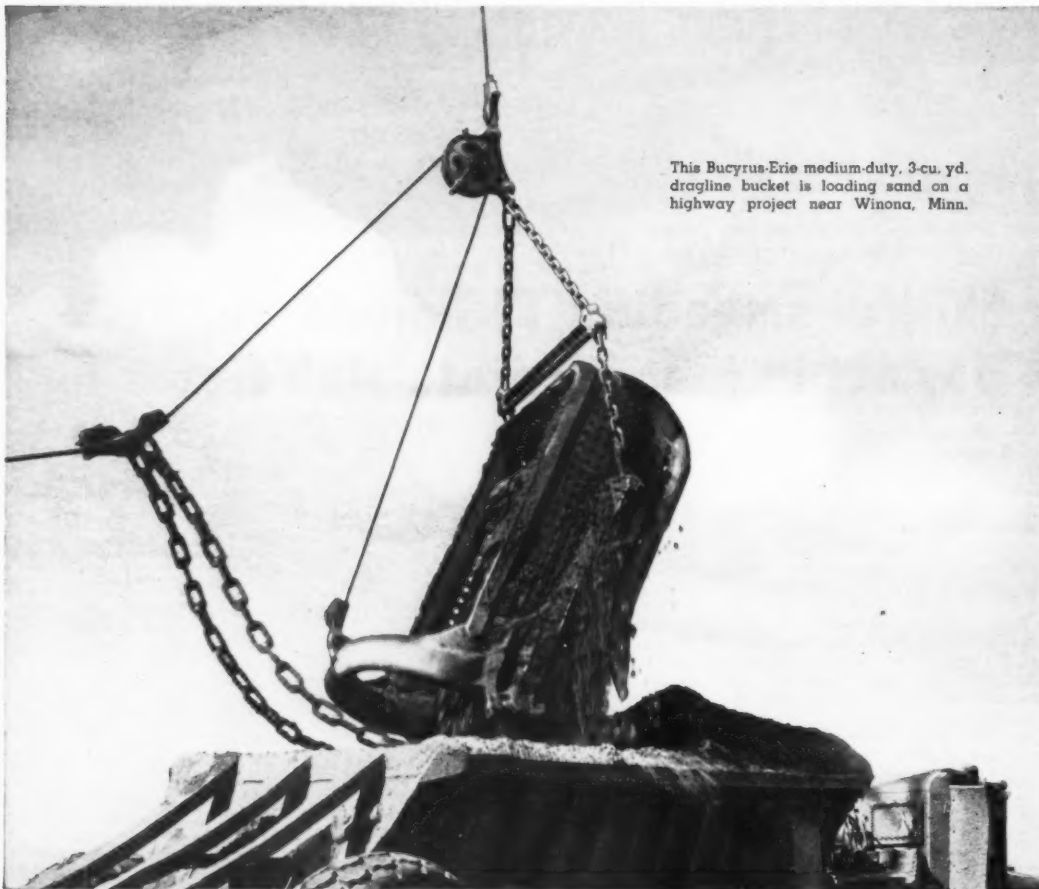
Subcontract repudiated

THE PROBLEM: A grading subcontract was repudiated by the prime contractor after part performance, because the subcontractor's machinery was inadequate for the job and his men untrained. Was the repudiation justified?

THE ANSWER: Yes. (Calhoun v. Midstate Contractors, Inc., 145 Fed. Supp. 417, decided by the United States District Court, Western District of North Carolina.)

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is simplified. BECOLOY can be cut with an acetylene torch and welded without special procedures.

New-design Bucyrus-Erie buckets are available in a wide range of sizes with solid or perforated baskets—light, medium or heavy duty types. Call your Bucyrus-Erie distributor... he'll help you choose the bucket that can best keep your hauling units on the go.

37R57



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BUCYRUS-ERIE COMPANY South Milwaukee, Wisconsin
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CONTRACTORS AND ENGINEERS

Text covers structural design in all metals

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The book is priced at \$8.

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In extreme cold in the ONLY insulated undergarment for the outdoorsman that you can keep on comfortably indoors too.



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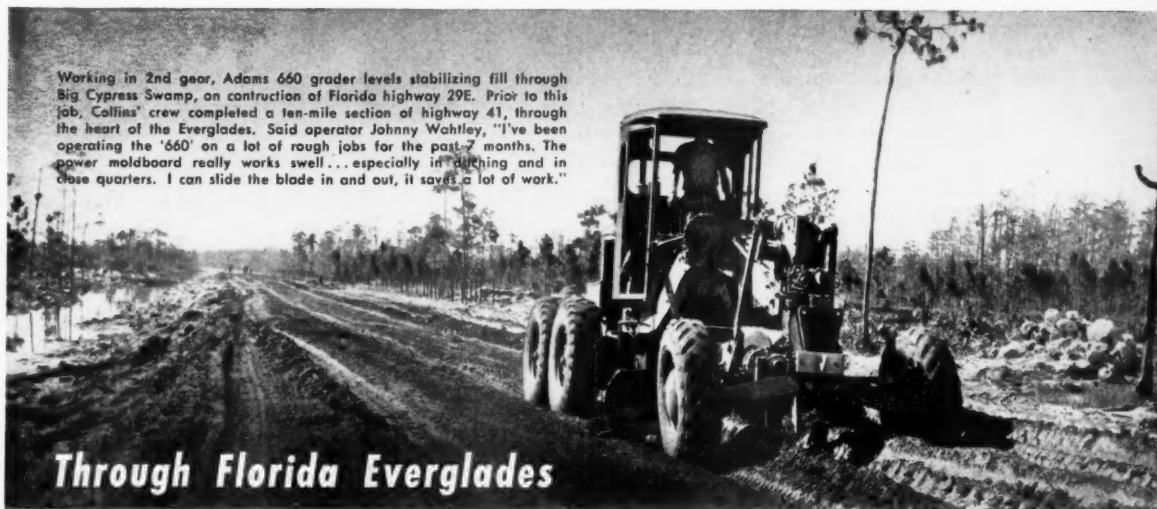
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Absorbs perspiration and moisture—eliminates clamminess and chills. Extremely lightweight. Famous TEMP-TRON insulation exhibited this year by U.S. Dept. of Commerce at Posen, Poland and Salonika, Greece Int'l Trade Fairs. Acclaimed by enthused sportsmen and outdoor workers everywhere.

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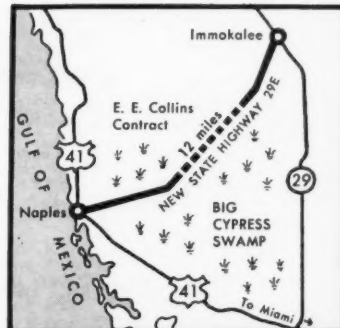
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LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS
A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

For more facts, use Request Card at page 18 and circle No. 302

avoid legal pitfalls

tion, technical compliance with the regulation will not necessarily exempt a contractor from liability for an accident.

Sales and use taxes

THE PROBLEM: Two construction companies formed a joint venture to execute contracts with a railroad company to eliminate tunnels, straighten tracks, and construct a "Y" and new spur track. The two construction companies formed a third company to hold title to the

construction companies' equipment to be used on the jobs. The third company was to rent the equipment to the construction companies. All three companies were nonresidents. Were Ohio use and sales taxes assessable on account of the rentals paid the third company for use of the equipment?

THE ANSWER: Yes. (Rochez Brothers, Inc., v. Bowers, 143 N. E. 2d 123, decided by the Ohio Supreme Court.) The court rejected contentions that there was an exemption from sales and use taxes under a clause of the Ohio law exempting sales for use by the consumer "directly in the rendition of public-utility service". The contractors could not be regarded as agents of the railroad company in procuring the equipment used for the job.

Contractor must refund amount of overpayment

THE PROBLEM: On a \$110,000 municipal job, the contractor was overpaid \$16,053.14 because of a mutual mistake. Was he bound to return that amount, even if he had over-extended his capital on unsuccessful jobs, believing he was entitled to the sum?

THE ANSWER: Yes. (Town of Bennington, S. C., v. Bledsoe, 84 S. E. 2d 554, decided by the South Carolina Supreme Court.)

The court noted that, ordinarily, one who voluntarily makes a payment with full knowledge of all the facts involved is not entitled to reclaim it. But in this case, there was a mutual mistake and the contractor could not justly keep what had been

mistakenly paid him, even if he had changed his position through assuming that the money was rightfully his.

A study of decisions shows that appellate courts have frequently declared the importance of the fact that funds mistakenly paid out belong to the public. In a Minnesota case (Duluth v. McDonnell, 61 Minn. 288, 63 N. W. 727), plaintiff city was adjudged entitled to compel refund of an overpayment resulting from a mistake in measuring pavement.

In an Iowa case, a county was awarded refund of an excessive payment made to a drainage contractor through an erroneous computation made by the county auditor. The Supreme Court said that the general rule that a voluntary payment, not induced by fraud or misrepresentation, cannot be recovered was inapplicable. The court said: "Payments thus made"—of public money—"are not voluntary in the sense that payments made by one individual to another may be." (Pocahontas County v. Katz-Craig Contracting Co., 181 Iowa 1313, 165 N. W. 422).

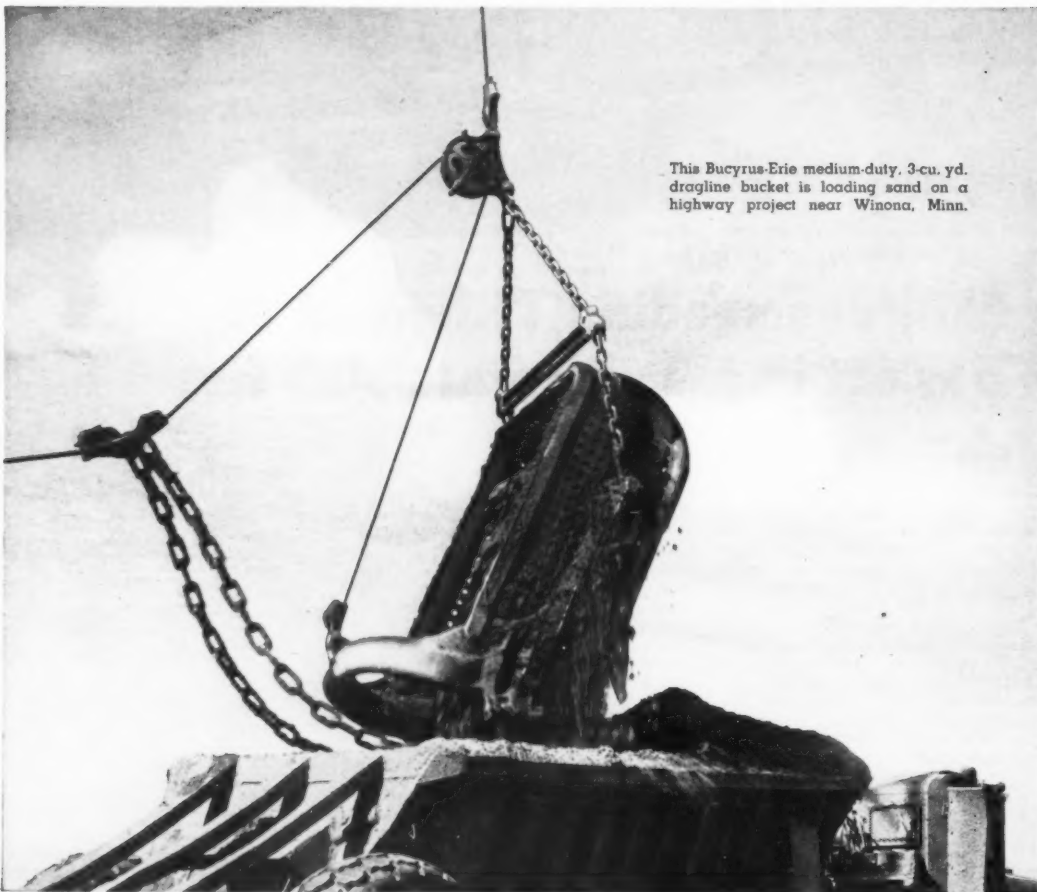
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A Familiar Sign at the Scene of Progress

BUCYRUS-ERIE COMPANY South Milwaukee, Wisconsin
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Over 50 years serving contractors... easily rigged on the job... conservatively rated for safety... simple in design... low-cost maintenance.

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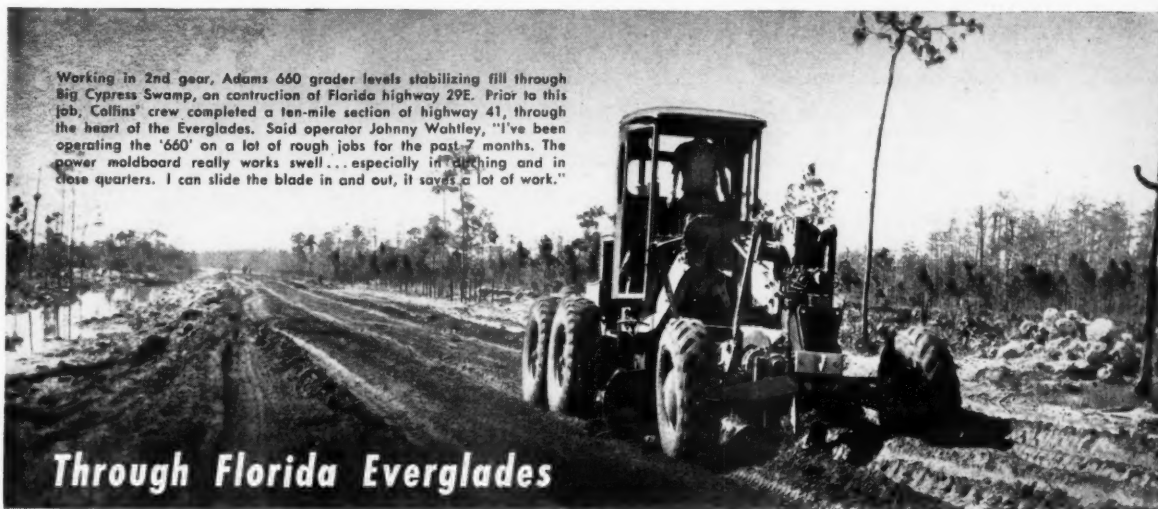
Absorbs perspiration and moisture—eliminates clamminess and chills. Extremely lightweight. Famous TEMP-TRON insulation exhibited this year by U.S. Dept. of Commerce at Posen, Poland and Salonika, Greece Int'l Trade Fairs. Acclaimed by enthused sportsmen and outdoor workers everywhere.

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OCTOBER, 1957

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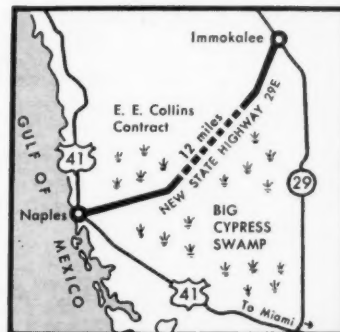
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LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS
A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

For more facts, use Request Card at page 18 and circle No. 302

Super service at no extra cost

**Arrow Contractors Equipment Co. supplies right rig for right job—
either a manufactured machine or a modified standard unit**

"Your problems are my problems" would be a good slogan for Charlie Riordan, president of Arrow Contractors Equipment Co., Chicago, Ill. Charlie's 34 years of construction experience come in mighty handy when a frenzied call from a local contractor demands, "What'll I do

now, Charlie?" Most often he supplies the contractor with the just right piece of equipment from a hand shovel to a power shovel. But if there is no such rig, Charlie makes it up for him.

Take, for example, the time a contractor had to put in new street lights

in Chicago. The rig he was using to open 20-inch-diameter base holes was big, clumsy, and slow. The contractor told Charlie how it was taking him 25 minutes to drill each 5-foot-deep hole, and how the big rig blocked traffic.

Charlie picked up pencil and paper, sketched out a couple of ideas, and talked to the mechanic in his well-equipped machine shop. With machine tools that can handle anything, the men got to work and came up with a honey of a rig. They started with a basic farm-type tractor and equipped it with a front-end loader. They removed the bucket, and mounted an A-frame and a 20-inch-diameter auger in its place. To power the auger, they tail-mounted a 125-cfm compressor driven from the tractor's power takeoff shaft.

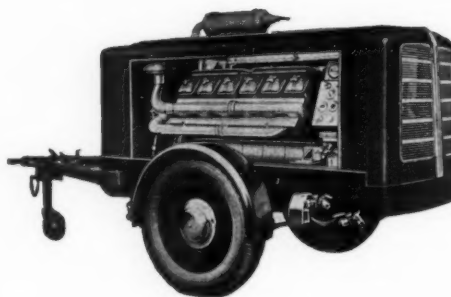
This post-hole digger drilled out the hole in two minutes, rather than 25. And the rig was compact, maneuverable, and caused very little inconvenience to traffic. Although it took Arrow 25 man-hours to make up the conversion, the contractor could switch from front-end loader to auger or back again in only two man-hours.

Some other rigs that Charlie dreamed up to solve other contractors' nightmares are a tractor-mounted steel-wheel roller that compacts a 6-inch-wide trench; a tractor-compressor-drill combination that proved to be an excellent, low-cost, highly mobile rock drill. Charlie says, "We'll give the customer what he wants. We'll even paint his truck mixer drum red, white, and blue if he wants it that way. Equipment rentals? Sure. Do we take trade-ins?

A dealer-designed rig—a tractor-compressor-auger combination—permits a contractor to open a 20-inch-diameter 5-foot-deep hole in two minutes on a street-lighting job. Before the contractor talked to Charlie Riordan, it took another machine 25 minutes to drill the hole.



**With a wheel load of 2541 lbs
on each of two wheels we can
produce 320 cfm of air.**



**D-901
320 cfm**

Why put up with liquid cooling weight, cost and trouble. Nature furnishes us with free air, we push it through the machine for trouble-free cooling.

AIR COMPRESSORS, INC.

2339 W. BEAVER ST.

P.O. BOX 2976

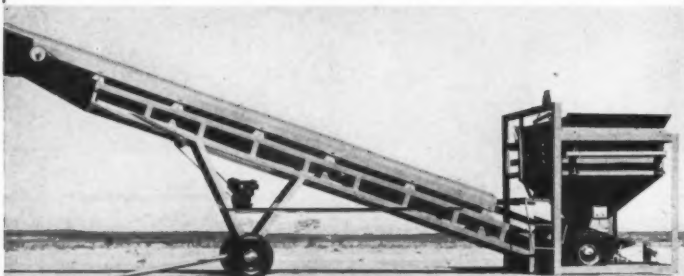
JACKSONVILLE, FLA.

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CONTRACTORS AND ENGINEERS

The Amazing . . .

ROSS PORTA-PLANT



OPERATING POSITION of the new ROSS PORTA-PLANT shows a revolutionary new concept in portable concrete batching plant design. Engineered to produce 40 cubic yards of concrete per hour, the ROSS PORTA-PLANT can be easily transported at normal road speeds by a half-ton pick-up truck. It is ready to operate immediately upon arrival at job site. It requires less than five minutes to remove four bolts and lower the plant into position.

DESIGNED AND ENGINEERED BY A READY-MIX OPERATOR FOR READY-MIX PRODUCERS

Ideal for large jobs, the ROSS PORTA-PLANT also provides maximum efficiency for the small producer. Designed for feeding with any front-end loader and for sack cement, the ROSS PORTA-PLANT is easy and simple to operate. ROSS PORTA-PLANT owners are enjoying amazing savings of up to \$1.50 per yard of transit mix. The plant is sturdily built for many years of trouble free use.

CONDENSED SPECIFICATIONS

POWER: 9 HP air-cooled gasoline engine with reduction gear. Mounted for easy starting or servicing.

CONVEYOR: Sealed, troughing and return carriers, 24" 4-ply belt with housing.

SCALES: Cardinal 3-beam: 10,000 pound, 8,000 pound, and 3,000 pound with over and under indicator. Fully visible to operator.

HEIGHT: Extreme height at bin 7'-6".

Available in 3 1/2 and 6 cubic yard models.

CONTACT US FOR THE NAME OF THE DEALER NEAREST YOU

ROSS PORTA-PLANT

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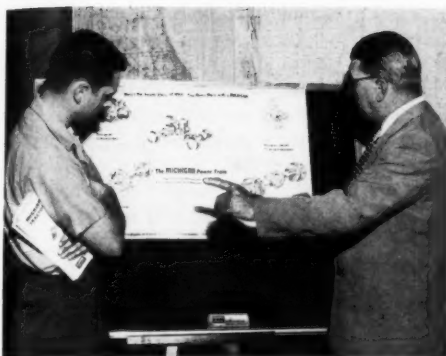
Phone 2697

Brownwood, Texas

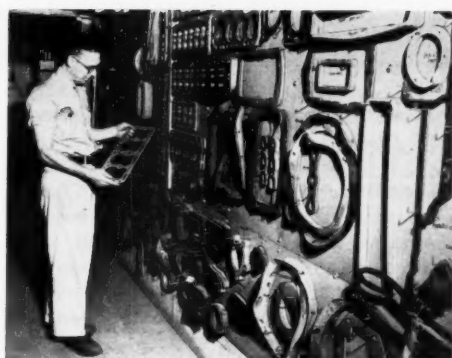
Exclusive Export Representative: P. J. Wolfson Co., Inc.

150 Broadway, New York 38, N. Y.

For more facts, use Request Card at page 18 and circle No. 303



Ed Shearier, of Arrow Contractors' parts department, picks a cylinder head gasket for a Continental F-140 engine off the neatly and clearly marked wall rack. Over 30,000 different parts are stocked as efficiently as these gaskets.



A potential customer gets first-hand information on the Michigan power train from Charlie Riordan (right), president of Arrow Contractors Equipment Co., Chicago, Ill. Riordan has 34 years of experience in construction machinery.

Absolutely; our machine shop will rebuild trade-ins as good as new—and then we'll sell or rent them out again."

Firm starts

Charlie Riordan started Arrow Contractors Equipment Co. 26 years ago, on a firm foundation of good service and has kept it that way ever since. Most of his customers can get anything they need at Arrow. The dealer handles everything from a 3/8-yard shovel to a 5 1/2-yard rig, from small Unit cranes to medium-size Michigans to giant Manitowocs. In tractors, Arrow stocks little Ford and Minneapolis-Moline 30-hp wheel models to big, brawny Michigan 165-hp tractor-dozers.

Loaders? You have a choice of various Ottawa, Wagner, Sherman front-end loaders for the small tractors or you can pick a Michigan 2 3/4-yard tractor shovel if you're moving big loads. In fact, when Clark Equipment Co. goes into full production early next year, Arrow will offer tractor shovels that can scoop up 6-yard loads. Other Arrow lines include Jaeger truck mixers, pumps, and compressors; Whiteman power carts and trowels; American Tubular Tower Co. and Archer building towers

(Continued on next page)

2800' cycles in less than 4 minutes...

on Amarillo park project



Fast-stepping D Tournapull is push-loaded with 6 to 7 yards in 75 feet, often in as little as 30 seconds. Loading here was in hard-packed clay; on other side of basin in sandy loam.

"D's" high apron lift and positive ejection tailgate are both electrically controlled... get load out fast. Spread time here averaged only 17 seconds. 1325' return trip, including rough grading of dam, averaged less than 1 1/2 minutes.



Improving city-owned Thompson Park, Amarillo, Texas, meant a variety of jobs. Two new dams were needed to check run-off water and trap silt from a water basin, and prevent flash floods. An existing dam needed rebuilding. Also scheduled were construction of roads, a miniature railroad, and "general" improvements.

Contractors Threet & Bumpus, Amarillo, decided that two new 138 hp LeTourneau-Westinghouse Tournapulls would provide lowest-cost dirt-moving for the many different assignments of the project. The performance of their modern, 9-yd. "D's" at Thompson Park convinced them that the versatile, 29.5 mph "D" is a go-anywhere dirtmover... one that builds profits on a wide range of jobs.

Big loads... fast cycles

Fast-moving "D's" hauled dirt to build up a dam, packing big 6 and 7-yard payloads. On return trips, "D's" helped level dam top by dragging scraper blade. Yet, 2800' cycles were clicked off in less than 4 minutes.

Co-owner Don Threet, like so many contractors across the nation, is well pleased with the work record of his D 'Pulls. Feature he likes best is exclusive, LeTourneau-Westinghouse power-transfer differential. As he puts it: "When one drive-wheel spins, the other pulls harder." Mr. Threet says this feature was one of the firm's main reasons for buying D Tournapulls.

"Loads better... easier"

Operator K. D. Coon says D Tournapull® "loads better and easier, and the dirt stays in the scraper." Fellow operator Johnny Broadus calls it "the easiest machine I've ever operated."

All-around utility tool

No doubt many of your jobs include scattered, odd-lot dirtmoving. The "Handyman D"—flexible, speedy, and mobile—handles such jobs faster and more efficiently than most larger scrapers. This 9-yd. dirtmover grades, backfills (with optional dozer blade), strips, backslopes, ditches, stockpiles, levels, spreads, and does many general construction and maintenance tasks, at lowest-net-cost-per-yard.

Ask for full facts on how minimum-investment, maximum-return D Tournapull can increase your profits.

DP-1430-DC-1

FOUNDATION CONSTRUCTION

CAISSONS SHAFTS DRILLED AND UNDERREAMED PIERS

SPECIAL DRILLING PROBLEMS

Offices in Atlanta, Ga., Pittsburgh, Pa., Washington, D.C.

Wire or phone for a quotation on your next foundation job—
ANYWHERE IN THE WORLD

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LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

For more facts, use Request Card at page 18 and circle No. 306

(Continued from preceding page)

and hoists; and a host of hand shovels, spades, chain, pails, and small hardware.

With 20 major equipment lines and over 30,000 different parts on the shelves, Arrow relies on the perpetual inventory "red-flag" system of stock control. The 90-day rule of thumb is not the only factor. Again here's where Charlie Riordan's long experience is a big help. Some parts are stocked that may never go, but if they should and no replacement is on hand, thousands of dollars' worth

of equipment would be tied up. Distance is another factor. Arrow can get overnight service from Clark (Mich.) and Manitowoc (Wis.), but it takes two days to get parts from Jaeger (Ohio) or Whiteman (Calif.).

Sales training

Arrow's territory includes ten counties in northern Illinois and three counties in northern Indiana. To serve the many customers in this heavily populated area, Arrow runs five fully equipped field service trucks all day long—and often into the night. The trucks carry everything that is needed for maintenance: power tools, generating sets, acetylene tanks, fuel, lubricants, and the like.

Although president Charlie Riordan

runs his company personally, Arrow is no one-man shop. Charlie has built a seasoned staff of topnotch equipment men. It probably has a lot to do with the way Charlie trains them. Younger fellows start on hardware and supply items—often come up through parts and service. They are thoroughly schooled before they tackle any of the major lines of construction machinery.

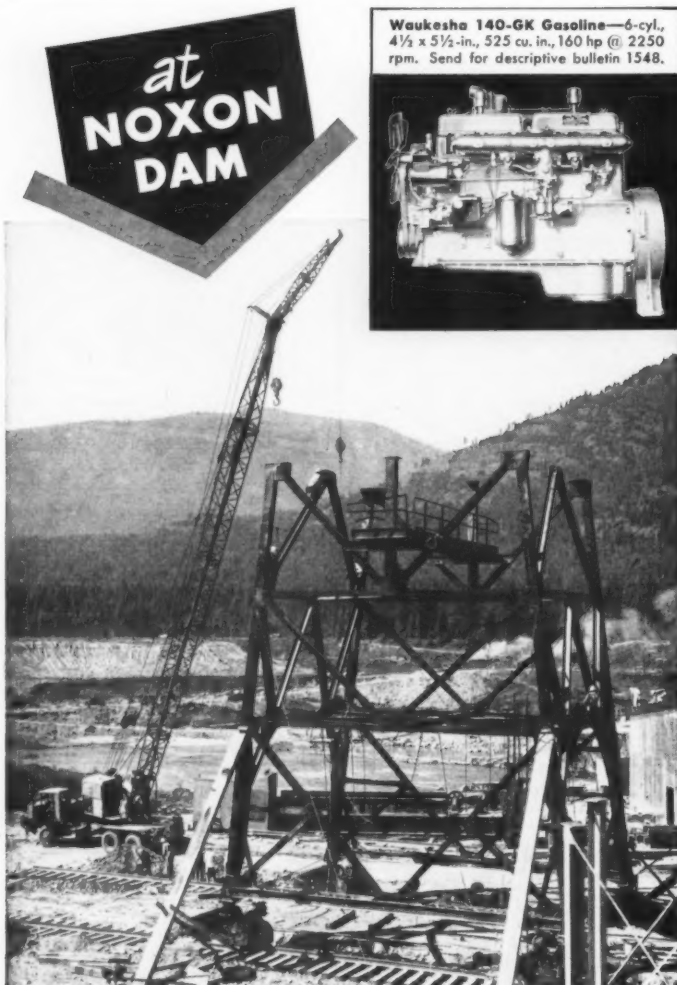
For the big machines Riordan uses specialists. For example, Don Jones and Steve Cosick know equipment inside and out. They'll talk your ear off on power-shift transmission and 3 to 1 torque multiplication. They follow latest developments, visit the plants for firsthand information.

Bernard O'Rourke, vice president, George O'Rourke, secretary, and Rex

Cunningham, assistant secretary, take on all paper work and administrative duties. Bob Allrich, sales manager, keeps the salesmen on their toes. Bob Sullivan, assistant sales manager, is a real trouble-shooter. He is a good technical man, a specialist. He always seems to be rushing off to help out some contractor with a problem.

New ideas, policies

Charlie Riordan keeps all his men informed of Arrow's progress. Bi-monthly meetings bring salesmen, servicemen, and partsmen together. Charlie uses slides and movies to explain new ideas in equipment, new policies for Arrow. This information and education program helps Arrow men work as a team to give customers excellent service. **THE END**



Morrison-Knudsen own and use Lorain Crane

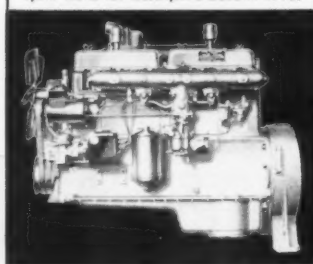
powered by
WAUKESHA

For the Noxon Rapids Hydroelectric Project on Clark Fork River in western Montana—Morrison-Knudsen Co., Inc. of Boise, Idaho are building a concrete and earth fill dam, maximum height 190 ft. and about 5930 ft. long. About the busiest piece of equipment on the job is their Waukesha-powered Lorain MC 505-W mobile crane. After setting up a concrete batch plant, it is shown here setting up a two whirley crane plant. The Lorain's 140-GK Waukesha Engine gives it safe, steady power with ready reserve for heavy handling as well as fast power for speedy mobility.

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN
NEW YORK TULSA LOS ANGELES

For more facts, use Request Card at page 18 and circle No. 307

Waukesha 140-GK Gasoline—6-cyl., 4 1/2 x 5 1/2-in., 525 cu. in., 160 hp @ 2250 rpm. Send for descriptive bulletin 1548.



A Worthington crawler tractor and a Michigan crane stand outside the new Billings, Mont., branch sales, rental, and service outlet of Miller Machinery Co.

Miller Machinery opens service, rental outlets

Miller Machinery Co., Missoula, Mont., has established branch sales, rental, and service outlets in Billings and Great Falls, Mont., in order to distribute Michigan tractor shovels and excavator-cranes, and Worthington equipment on a state-wide basis. Russell L. Mills is in charge at Billings; Stan Giles handles service; and

Vernon Hoff is responsible for the office and parts. The Billings plant is located at 640 Highway 10 East.

George F. Flaherty heads the Great Falls branch, with Al Torrey in charge of service, and Ray Olsen handling office and parts. This building is located at 1610 River Drive in Great Falls.

NEW LIGHTWEIGHT SCOOP MOVES 1/2 YARD OF DIRT IN ONE BITE!



DANUSER TERRA-SCOOP
for large or small contractors!

Here's a new concept in lightweight earthmovers... a finishing tool which actually makes a prime mover of your tractor. The Danuser Terra-Scoop does everything the big earthmovers do, in miniature. Slices off high places, carries dirt to low places, dumps, scarifies... all hydraulically, without long ropes or levers... at a cost of only a few pennies per operation. Quickly

reversed by changing four bolts.

This is a rugged, alloy-steel machine which can pay for itself quickly. Does the whole job for small contractors. Frees expensive heavy machines for large operators. See the Danuser Terra-Scoop soon at your local tractor dealer.

TESTED BY TRACTOR MANUFACTURERS

DANUSER MACHINE CO.

535-45 East 3rd St. • Fulton, Mo.

"Contributing to Farm Mechanization"

FREE LITERATURE!

WRITE TODAY FOR FULL DETAILS! Specify make and model of your tractor

For more facts, use Request Card at page 18 and circle No. 308

CONTRACTORS AND ENGINEERS

Yale & Towne appoints three representatives

R. W. Bleiler Equipment Co., Inc., has been appointed a dealer for the entire state of Connecticut by Yale & Towne Mfg. Co., Contractors Machinery Division, Batavia, N. Y. Located at 579 New Park Ave., West Hartford, Conn., Bleiler Equipment will handle the complete line of Trojan tractor shovels.

The company also named Stewart Equipment Co., Inc., of Harrisburg, Philadelphia, and Wilkes Barre, Pa., the Trojan tractor shovel distributor for central and eastern Pennsylvania and southern New Jersey. This dealer uses a twin-engine plane to fly customers from outlying areas to the showroom.

Freile Associates, Bowen Bldg., 815 15th St. N. W., Washington, D. C., has been appointed government sales and service representative for the Trojan line of tractor shovels.

Reo holds conference for nationwide distributors

The Reo Division, The White Motor Co., Lansing, Mich., held a conference for its nationwide distributors to discuss with top Reo-White officials plans to augment the distributor phase of Reo's new merchandising program. The meeting was aimed at accelerating assistance to the firm's distributors in their sales and service activities.

A major outcome of the conference was the formation of a Reo Distributor Council. Composed of five men, the council will meet periodically with Reo sales department people. Its members are to come from both small and large distributorships as well as from representative sections of the country.

Orton Crane names West Coast distributor

Robert H. Fox has been appointed distributor in California, Arizona, and in Clark County, Nevada, for the Orton Crane & Shovel Co., Chicago, Ill. Fox, formerly with Six Wheels and Cook Bros. Equipment Co., has offices at 14730 Vanowen St., Van Nuys, Calif.

Salem Tool dealer in Ohio

Rish Equipment Co., Bluefield, W. Va., is the newest sales representative for the Salem Tool Co., Salem, Ohio. The dealer will handle McCarthy vertical and horizontal auger drills in all but ten eastern Ohio counties, and will cover the entire state for other McCarthy drills.

Parts and service will be handled from the dealer's offices in Columbus, Portsmouth, Dayton, Cincinnati, Toledo, Cleveland, and Youngstown.

Six dealers for Childers

Six new dealers have been appointed by the Childers Mfg. Co., Inc., Albuquerque, N. Mex. Armstrong-Holland Pty., Ltd. in Sydney, New South Wales, Australia, has been

licensed to manufacture Childers heaters and distribute them in Australia and New Zealand.

Clark Equipment Co., Little Rock, Ark., is the distributor for that state. Cummings, McGowan & West, Inc., St. Louis, Mo., has a territory covering eastern Missouri and southern Illinois. Highway Equipment & Supply Co., Lincoln, Nebr., will cover that state. Olson Equipment Co., Minneapolis, Minn., will handle that state. The distributor for North and South Dakota is Swanston Equipment Co., Fargo, N. Dak.

Symons organization to serve two other firms

Hardware and accessories made by Williams Form Engineering Corp., Grand Rapids, Mich., are being distributed in the light and general construction field by Symons Clamp & Mfg. Co., and its dealer-sales organization. Symons is also a 44-state distributor of Sta-Vis Form Oil concentrate, produced by the Sta-Vis Oil Co., St. Paul, Minn.

Williams equipment is adapted to the gang-forming of large walls or

other structures where long, straight expanses of concrete are required. Sta-Vis Form Oil concentrate is a form coating designed to help preserve forms and make stripping easy.

H. O. Penn promotes four

The H. O. Penn Machinery Co., Inc., New York, N. Y., has promoted three men in its service department at the Westbury, Long Island, N. Y., branch.

James Argento has been made
(Continued on next page)

A special interview

How ABRASIVE SAND problem was solved by rubber-tired tractor



You've probably seen the damage sand can do to your equipment... grinding away at exposed parts of earthmoving units. One machine—rubber-tired Tournatractor®—resists abrasion so well, however, that it's now the standard tractor in many sand areas. If, in your dirt-moving, your tractors frequently work in sand, or other abrasive materials, read what a sandpit superintendent—Ira Kent, Aubuchon Silica Mining Division of Portage-Manley Sand Co. at Festus, Mo.—has to say.

Q. "Mr. Kent, why did you choose Tournatractor?"

A. "There's a lot of sharp silica sand around here, and much of our work is on rocky surfaces. When we used crawlers, we had a major problem in track maintenance. Our sand in those tracks worked just like a grinding compound. We had continuous pad and roller trouble. So we bought a Model C-2 Tournatractor in 1950, and liked it so much we bought our present improved Tournatractor in '52."

Q. "What sort of work does your Tournatractor do?"

A. "We use it for just about everything. Its main jobs are stripping overburden and cleaning up around our shovels. It also builds and maintains haul roads, takes out trees, pulls heavy equipment, and does a lot of clean-up after blasting. Actually, we've found that we don't have any tractor jobs that our Tournatractor can't do."

Q. "...and what has the maintenance record been, Mr. Kent?"

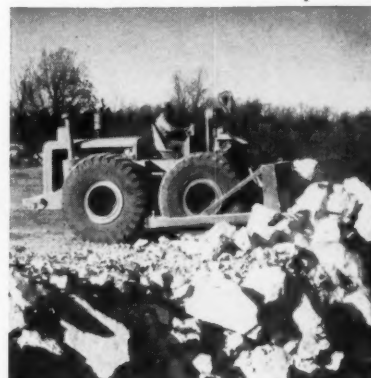
A. "Well, we've worked our Tournatractor 45 hours a week for almost 5 years, without any real trouble. Our one and only major repair expense in all that time has been replacement of the torque-converter oil-seal and bearings. We've never done anything to the engine... not even replacing an injector or anything. We never broke an axle, chipped a gear, or had a single major thing go wrong."

Q. "What about the electrical system and its maintenance?"

A. "We like this electric control system... and it's never given us any trouble. In all this time, we have put in only one set of discs in the motor brakes, and two little switches. But that's it, so far as repairs are concerned."

Q. "And the tires?"

A. "Our present Tournatractor front tires are still the originals. We replaced the two back ones last spring, after better than 4 years of service. We've never had a blow-out, on any of the four. As to changing or repairing tires—you know that on Tournatractor, changing a tire is as easy as changing an 8.25 truck tire. That's another thing we like about this dozer. Lots easier than fixing track troubles."



Tournatractor's wide, low-pressure tires flex easily over sharp rocks without cutting... and age-old problem of rocks, sand, and dust clogging up track assembly.



One of many spare-time jobs handled by Tournatractor is building new haul road. Operator takes overburden dirt, drifts it on down to bottom, building up road grade.



Pit Mgr. Kent says: "Main reason we like our rubber-tired Tournatractor is its go-anywhere ability. It's quick on its feet... handles easier... maneuvers easier."

This owner-verified work report indicates how Tournatractor can solve your costly abrasion problem. Rolling on big rubber tires... with all parts sealed and protected against damage by rocks, sand, and other harmful materials... it gives you years of low-cost, trouble-free service. See your nearby LeTourneau-Westinghouse Distributor for full details and a working demonstration.

CT-1501-DC-1



LETourneau-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

For more facts, use Request Card at page 18 and circle No. 309

distributor doings

(Continued from preceding page)

service manager. Jack Stroh has been appointed field service representative to contact customers who have service or maintenance problems on Caterpillar equipment. Jack Parkinson, named assistant service manager, will continue to manage the internal service office procedures for the firm.

Thomas F. Whalen has been appointed parts representative to cover the New York counties of Dutchess, Ulster, Sullivan, Orange, and Rockland.

Euclid-Kentucky appoints

George R. McGill has been appointed sales manager of Euclid-Kentucky, Inc., Louisville, Ky. McGill was formerly with the Industrial Tractor & Equipment Co., Inc., Nashville, Tenn.

Euclid-Kentucky is that state outlet for the products of the Euclid Division, General Motors Corp., Cleveland, Ohio.

New Carver Pump dealer

Carver Pump Co., Muscatine, Iowa, has appointed Mark - Witthauer Equipment Co., Minneapolis, Minn., a distributor. The dealer will carry Carver's line of self-priming contractor pumps and diaphragm pumps.



Two crawler tractors with bulldozers, Model 500 (left) and the Model 320, are demonstrated at the Tractorama display, which was part of J. I. Case's industrial dealer meeting.

J. I. Case holds first industrial dealer meeting

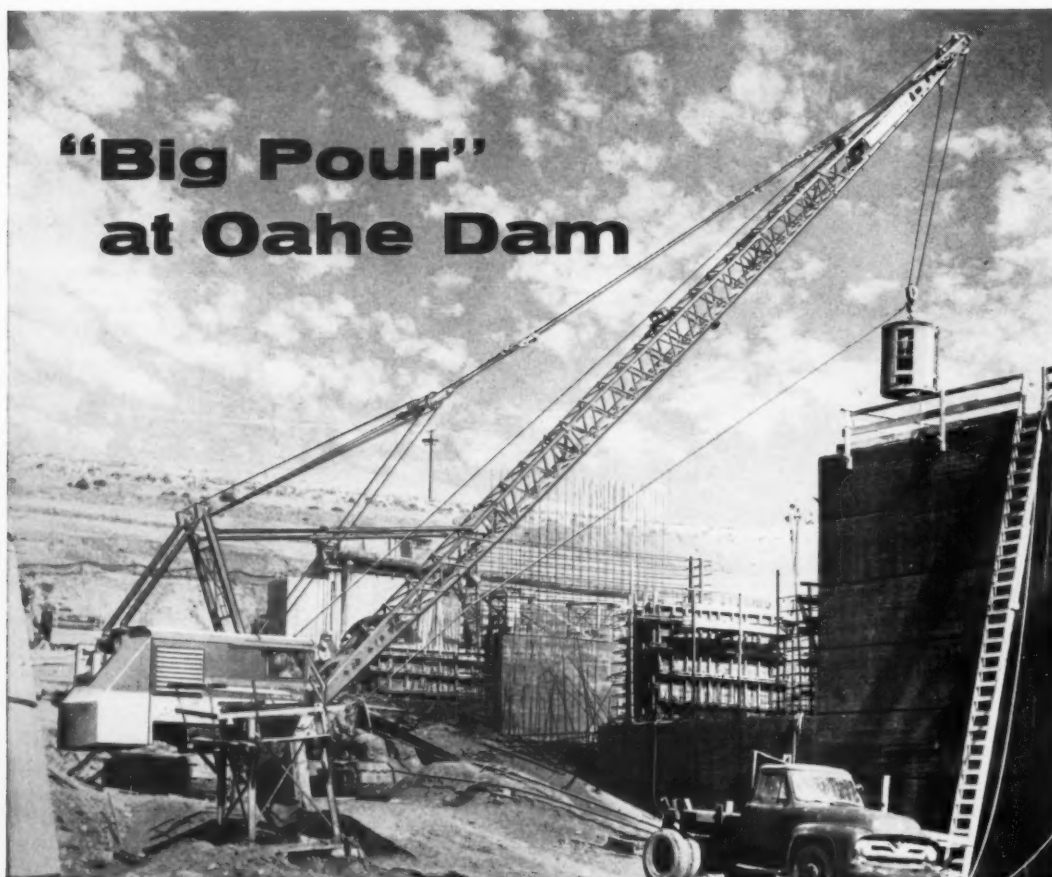
The J. I. Case Co., Racine, Wis., held its first annual industrial dealer meeting at its Burlington, Iowa, works. Over 400 persons representing 140 Case dealerships throughout the eastern, midwestern, and southwestern sections of the United States and Canada appeared at the two-day sessions.

A special feature of the meetings was a model Tractorama display of the complete line of Case industrial products—wheel and crawler tractors equipped with hydraulic loaders, bulldozers, angledozers, backhoes, scarifiers, fork lifts, and trailers. Also unveiled were a new 42-hp logging special crawler, a Model 320 high-lift crawler-dozer, and a special Model 320 wheel loader.

Dealer opens branch

Griffin Equipment Corp., New York City, distributor for General Motors industrial and marine diesel engines, has just opened a branch office on U. S. Highway 46 in Lodi, N. J. Allan C. Townsend is regional manager at the new branch, which will handle complete sales, service, and parts.

Griffin's home office is at 881 E. 141st St., Bronx, N. Y.



Manitowoc crane handles almost 115,000 yards of concrete

Pierre Constructors rely on a fast Manitowoc Model 3900 60-ton crane to set the pace spot pouring concrete at the \$320,000,000 Oahe Dam Project near Pierre, South Dakota. The company's concrete contract calls for 115,000 yards—most of it handled by the Manitowoc rig equipped with a 100' boom and a 2-yd. bucket.

Precise Control

Easy-to-operate air controls and smooth torque converter power help the crane operator to hit the forms with absolute precision. The 11,600 lb. bucket is brought to within 6" of the forms easily and quickly because of the exact "feel" of the air controls. Uniform power flow from the torque converter eliminates all "jump" from crane operation when swinging the heavy concrete bucket over the forms.

Also Sets Stone

In addition to pouring concrete, the Manitowoc 3900 also sets derrick stone. For this exacting operation, the same 100' boom is used, providing a 45-ton capacity.

The crane's wide-spread crawlers and massive carbody, together with balanced design for scientific weight distribution, assure the positive stability necessary for pin-point accuracy.

Performance-Proved

Pierre Constructors also operate a Manitowoc 1 1/4-yd. Model 2000 Trench Hoe at the dam site. H. B. Bruce, Project Manager for the company says, "Both units have come up to all expectations. We especially like the independent boom hoist on the crane which allows us to lift and at the same time operate in a larger area without shifting the boom or traveling. This not only saves time, but also cuts down on wear and tear on the machine."

You can have outstanding performance like this on your next contract. Call your Manitowoc distributor now for full details and informative literature.

Manitowoc Engineering Corp., Manitowoc, Wis.

SHOVELS
1-5 1/2 YD.

Manitowoc
CRANES
20-100 TON

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WE MANUFACTURE ALL SIZES

• Detroit	• Lull
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(3 types)	berg (M-B)
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Also many others
Also Cores Made to Your Specification

SUGGESTION—To faraway users, Order cores only without any fibres but ready to fill.

Also furnished filled with Palmyra-Hickory or Brass Fibres or even Spring Steel Wires.

WE SHIP WORLDWIDE—IMMEDIATELY

Road Builders — it's sensational!
BIG PECKERWOOD BIG
C-O-N-T-I-N-U-O-U-S

Drag Broom Levelers with Spring Steel Wires or Brass Fibres six inches wide and lengths to 12 feet, and now three inches wide. No frame required.

In stock **ONLY \$350 FOOT**
Length 4', 6', 8' or 12'. Wt. approx. 5 1/2 lb. (foot)

THE LITTLE PECKERWOOD
3" wide, 15" long, with two bolts, fits your present frame.

ONLY \$250 EACH

KENNEDY'S
VAN BRUSH MFG. CO., INC.
Since 1928

Dept. A, 327 So. West Blvd., Kansas City, Mo.

For more facts, circle No. 311

CONTRACTORS AND ENGINEERS

Costs, specifications topic of third edition

Volume II of "Data Book for Civil Engineers—Specifications and Costs" is now available in the third edition from John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. Written by Elwyn E. Seelye, the book is designed for use by chief or administrative engineers, and provides the necessary data for preparing specifications for airports, roads, railroads, bridges, dams, and sewers.

The three-part book covers contract documents, site investigation, structural specifications, industrial buildings, airports, roads, and sewage treatment and water supply. It also includes control indexes; building, unit, and housing costs; mechanical and electrical power; method of estimating fees; and a study of depreciation and obsolescence. A glossary, specifications index, and costs index conclude the book. Charts and tables supplement all written material.

Priced at \$20, the book may be obtained from the publisher.

Laying pipeline in rocky country shown in film

Gardner-Denver Co., Quincy, Ill., has released a film that shows how the problems in laying a pipeline in rocky country were licked. The 19-minute sound, color film, "Overland Underground", covers a 160-mile stretch of unusual terrain between Ignacio, Colo., and Moab, Utah. Surface rock along this route made necessary special construction techniques on the part of the building crews.

The entire pipeline extends from Farmington, N. Mex., to Bellingham, Wash., carrying natural gas to the Pacific Northwest and serving several cities in between.

Copies of the film can be obtained for showing without charge to schools, clubs, or groups by writing to the Film Library, Gardner-Denver Co., Quincy, Ill.

Book compiles information on metallurgical progress

"Metallurgical Progress—3" is the third of a series of reviews by leading specialists in branches of the iron and steel industry. The book contains reviews on refractories, non-destructive testing, coke, and foundry technology.

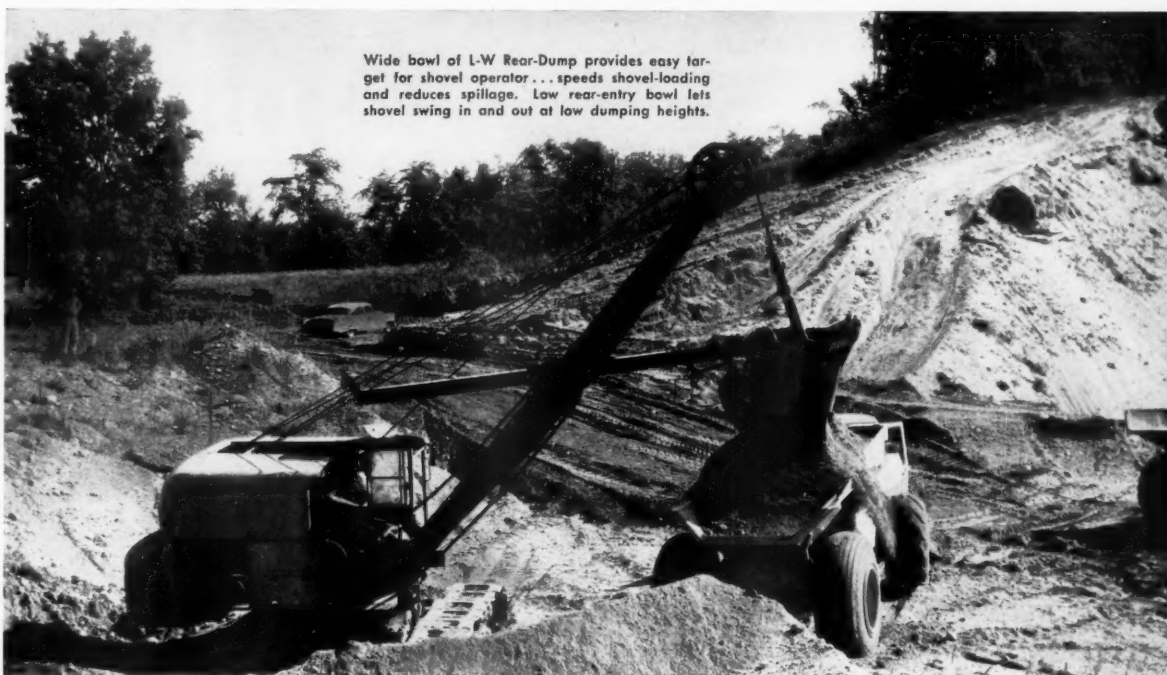
The book is priced at \$6 and may be ordered from the Philosophical Library, Inc., 15 E. 40th St., New York 16, N. Y.

Gen-A-Matic Corp. names L. F. Working

Loren F. Working has been appointed vice president of the Gen-A-Matic Corp., Van Nuys, Calif. Working was formerly executive vice president of the Chain-Veyor Corp., and prior to that was vice president in charge of sales for Clayton Mfg. Co.

Guatemala has completed grading the Atlantic Highway stretching from the capital to the Port of Barrios.

WINTER EARTHMOVING OPERATIONS are being made easier and easier. This Athey PRB21 has a heated body trailer so that sticky or frozen materials can be discharged faster in cold weather. Made by Athey Products Corp., Chicago, Ill., the unit is powered by a Caterpillar DW21 tractor.



Wide bowl of L-W Rear-Dump provides easy target for shovel operator... speeds shovel-loading and reduces spillage. Low rear-entry bowl lets shovel swing in and out at low dumping heights.

Michigan gravel firm BOOSTS PRODUCTION by opening shorter haul route

... L-W Rear-Dump licks sand, uphill haul

To step up production of sand and gravel needed for paving Michigan Route 27, Nashville Gravel Co., Nashville, Michigan, opened a more direct pit-to-plant route. The new half-mile haul-road was extremely sandy, with difficult adverse grades. It was considerably shorter, however, than the "long way around" which Nashville's LeTourneau-Westernhouse D Tournapull® Rear-Dump and 3 other haulers on the job had been using.

Hauling weighed loads of up to 15 tons, the 138 hp "D" demonstrated its rugged muscle-power and traction. It climbed a steep grade out of the pit with little difficulty, where competitive units had to wait until a bulldozer cut down the grade. Machine hauled steadily over the rough haul-road, without trouble. It made several trips—pioneering and compacting the trail so that Nashville's

other units could risk using the new shorter route.

Produced 1500 tons
tested gravel daily

To supply two double-drum pavers on Route 27, 1500 tons of tested gravel had to be produced per day from the pit. The Rear-Dump regularly hauled heaped loads 2115' over sandy, hilly roads... deposited loads in hopper... then returned the same distance, averaging the 4230' cycle in 7.61 minutes.

"Gets where other units won't go"

Supt. Dale Smith had this to say about the D 'Pull' Rear-Dump: "We like its maneuverability. It will get in and out of places where our other units won't go. It's safer, because the operator has good visibility and positive dumping control."

Owner F. G. Cheney said, "We like the Tournapull because it delivers more material on this longer haul."

The flotation of the big tires is good in soft conditions."

It will pay you to investigate LeTourneau-Westernhouse Tournapull Rear-Dumps. They're top production haulers that work profitably everywhere, and especially in rugged terrain. Available in 3 sizes to fit your particular jobs: 11, 22, and 35-ton models. Write for full details.



D 'Pull' Rear-Dump spills 15-ton load of sand and gravel into hopper at washing plant near Nashville, Mich. Here gravel is washed, processed, and tested for Michigan State specifications—to be used in manufacturing concrete to pave Route 27.

*Trademark DR-1299-Q-1



LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

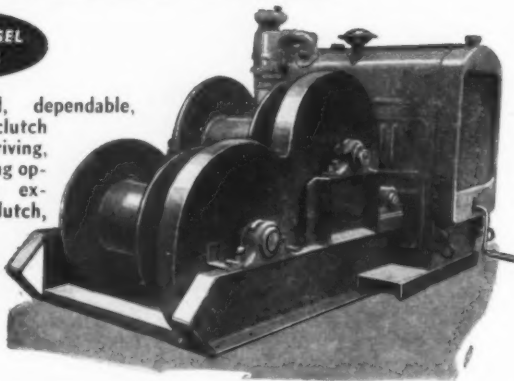
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KING Hydraulic Controlled HOISTS

SINGLE DRUM • DOUBLE DRUM • TRIPLE DRUM

GASOLINE, DIESEL
OR ELECTRIC

Especially rugged, dependable, smooth operating clutch for severe pile driving, dragline and hoisting operations. Internal expanding friction clutch, hydraulically actuated; made by leading manufacturer of hydraulic truck brakes.



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**QUALIFIED
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EVERYWHERE!**

Convention calendar

October 7-10 American Institute of Steel Construction

Meeting, Hotel Del Coronado, Coronado, Calif. L. A. Post, executive vice president, AISC, 101 Park Ave., New York 17, N. Y.

October 8-11 Ohio Short Course on Roadside Development

Meeting, Departments of State Building, Columbus, Ohio. Chas. R. Sutton, OSCRD, Brown Hall, Ohio State University, Columbus, Ohio.

October 9-11 National Slag Association

Annual Meeting, Plaza Hotel, New York, N. Y. E. W. Bauman, managing director, NSA, 613 Perpetual Bldg., Washington 4, D. C.

October 14-18 American Society of Civil Engineers

Annual Convention, Statler Hotel, New York, N. Y. D. P. Reynolds, assistant to the secretary, ASCE, 33 W. 39th St., New York 18, N. Y.

October 17-19 National Society of Professional Engineers

Fall Meeting, Grand Pacific Hotel, Bismarck, N. Dak. Kenneth Trombley, NSPE, 2029 K St. N. W., Washington 6, D. C.

October 21-23 American Concrete Pipe Association

Seventh Annual Short Course School of Instruction, Chase Hotel, St. Louis, Mo. Howard F. Peckworth, managing director, ACPA, 228 N. La Salle St., Chicago 1, Ill.

October 21-25 National Safety Council

Forty-fifth National Safety Congress and Exposition, Conrad Hilton Hotel, Chicago, Ill. R. L. Forney, secretary, 425 N. Michigan Ave., Chicago 11, Ill.

October 24-25 Computer Applications Symposium

Meeting, Sherman Hotel, Chicago, Ill. Conference secretary, Armour Research Foundation, Illinois Institute of Technology, 10 W. 35th St., Chicago 16, Ill.

October 28-30 American Road Builders' Association

Fifth Annual National Highway Conference for County Engineers and Officials. French Lick-Sheraton Hotel, French Lick, Ind. Ben F. Ostergren, managing director, County and Local Roads Division, ARBA, World Center Bldg., Washington 6, D. C.

October 28-30 National Lubricating Grease Institute

Annual Meeting, Edgewater Beach Hotel, Chicago, Ill. T. W. Miller, executive secretary, NLGI, 4638 J. C. Nichols Parkway, Kansas City 12, Mo.

October 29-30 American Concrete Institute

Meeting, Ben Franklin Hotel, Seattle, Wash. William A. Maples, secretary-treasurer, ACI, P. O. Box 4754, Redford Station, Detroit 19, Mich.

October 29-31 Navy Bureau of Yards and Docks

Symposium on Construction Cost Reduction Through Creative Design and Engineering. U. S. N. Civil Engineering Research and Evaluation Laboratory, Port Hueneme, Calif. Commanding Officer, U. S. Naval Construction Battalion Center, Port Hueneme, Calif., Code 15.

October 30-November 1 Virginia Highway Conference

Meeting, Virginia Military Institute, Lexington, Va. R. P. Ellison, exec. asst., VHC, 1221 E. Broad St., Richmond, Va.

November 4-5 Wire Reinforcement Institute

Annual Fall Meeting, Safari Hotel, Scottsdale, Ariz. Frank B. Brown, managing director, WRI, National Press Bldg., Washington 4, D. C.

November 6 The Moles

Members Dinner, Biltmore Hotel, New York, N. Y. The Moles, 11 W. 42nd St., New York 38, N. Y.

November 10-16 American Society of Sanitary Engineering

Meeting, Lauderdale Beach Hotel, Fort Lauderdale, Fla. Frank Warren, general chairman, ASSE, 818 N. E. First Ave., Fort Lauderdale, Fla.

November 12-14 National Association of Corrosion Engineers

Fall Meeting, Northeast Region, Penn-Sheraton Hotel, Pittsburgh, Pa. A. B. Campbell, executive secretary, NACE, 1061 M & M Bldg., Houston 2, Texas.

November 15-22 American Association of State Highway Officials

Meeting, Conrad Hilton Hotel, Chicago, Ill. A. E. Johnson, executive secretary, AASHO, 917 National Press Bldg., Washington 4, D. C.

November 18 Cleveland Engineering Society

Sixth Annual Construction Conference, Cleveland Engineering Society, Cleveland, Ohio. Edward Wolfson, chairman, CES, 2136 E. 19th St., Cleveland, Ohio.

December 4-5 The Asphalt Institute

Meeting, New York Athletic Club, New York, N. Y. Asphalt Institute, University of Maryland, College Park, Md.

December 11-12 National Construction Industry Conference

Conference, Congress Hotel, Chicago, Ill. V. J. Danilov, public relations manager, Illinois Institute of Technology, 35 W. 33rd St., Chicago 16, Ill.

CONTRACTORS AND ENGINEERS

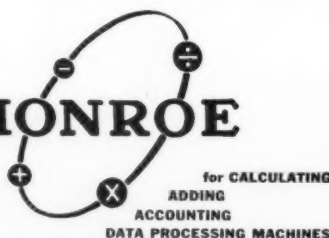


The only
calculator that
brings Automation
to Estimating

ONLY MONROE CAN MULTIPLY WIDTH X LENGTH X DEPTH IN ONE CONTINUOUS ERRORLESS OPERATION!

When turning take-off specifications into dollars and cents estimates, both speed and accuracy are vital. This Monroe Calculator with its exclusive ability to multiply three or more factors together in one continuous work-saving operation shortcuts literally hundreds of figuring steps in construction estimating. Volume problems such as cuts and fills and cubic yards of material are naturals for this machine. Monroe's ability to hold a constant multiplier also speeds the work of determining angle areas. Thanks to these and many other automatic features, Monroe Calculators save you time and money on every figuring job from simple payroll to complex coordinates problems. If your business depends on estimating speed and accuracy, it will pay you to investigate Figurework Automation with a Monroe Calculator. Locate the nearest Man from Monroe in the yellow pages of your telephone directory. Monroe Calculating Machine Co., Inc. General Offices: Orange, N. J. Offices throughout the world.

See the MAN from **MONROE**



For more facts, use Request Card at page 18 and circle No. 314

Caterpillar to erect new industrial engine plant

Construction is under way on a new 500,000-square-foot industrial engine plant for Caterpillar Tractor Co., Peoria, Ill. Located 12 miles north of Peoria, the plant will be the first of three facilities built in the 1,100-acre area.

Preliminary work on the plant includes site preparation by the McDougal-Hartman Co., Peoria. The firm will cut, fill, and grade the site; excavate trenches for the installation of underground piping; install trunk line storm sewers and railroad track; and later will pave parking lots, driveways, storage areas, and floors. The initial site preparation calls for the moving of 600,000 cubic yards of earth.

Scheduled for completion by early 1959, the industrial engine plant will manufacture the company's two largest engine models—the D397, having a 650 maximum horsepower, and the D375, with 430 maximum horsepower. In addition, the plant will be the assembly point for industrial engine arrangements of other engines in the Caterpillar line. Design and manufacture of all special industrial engine attachments will also be carried on in the plant.

It is expected that 1,200 will be employed in the new plant.

Keystone State passes contractor bidding law

Pennsylvania's Governor George M. Leader has signed into law a bill passed unanimously by the state legislature that will benefit every contractor bidding on state highway work in the state.

The new law provides for a reduction of the retained percentage on highway contracts from 10 per cent on current estimates throughout the entire job to 10 per cent on current estimates until 50 per cent of the project has been completed. No retained percentage is to be withheld by the state highway department after 50 per cent of the project has been completed. The state highway department will pay 5 per cent interest on money retained on final estimates, if the final estimate is retained for more than 90 days after completion and acceptance of the project.

The law will assist highway contractors in financing their projects by the reduction of the retained percentage from 10 per cent to 5 per cent throughout the entire project. This will give contractors 5 per cent additional working capital.

The payment of 5 per cent interest on final estimates, beginning 90 days after jobs have been completed and accepted, will correct a hardship that has existed for many years. Over a long period of time, several districts throughout the state have failed to complete their final figures on projects for many months and, in some cases, for years. There have been cases when as many as 30 months have elapsed after completion of jobs before contractors have received their

final payments. On occasions this resulted from the state highway department not having sufficient personnel and engineers to take off the final estimates.

The legislation was sponsored by the Associated Pennsylvania Constructors.

Electrostatic filter system for new skyscraper

An electrostatic filter system which magnetically eliminates dirt from the

air will make the world's first bronze skyscraper one of the cleanest and healthiest office buildings in the world. The 38-story building is located at 375 Park Ave., New York City.

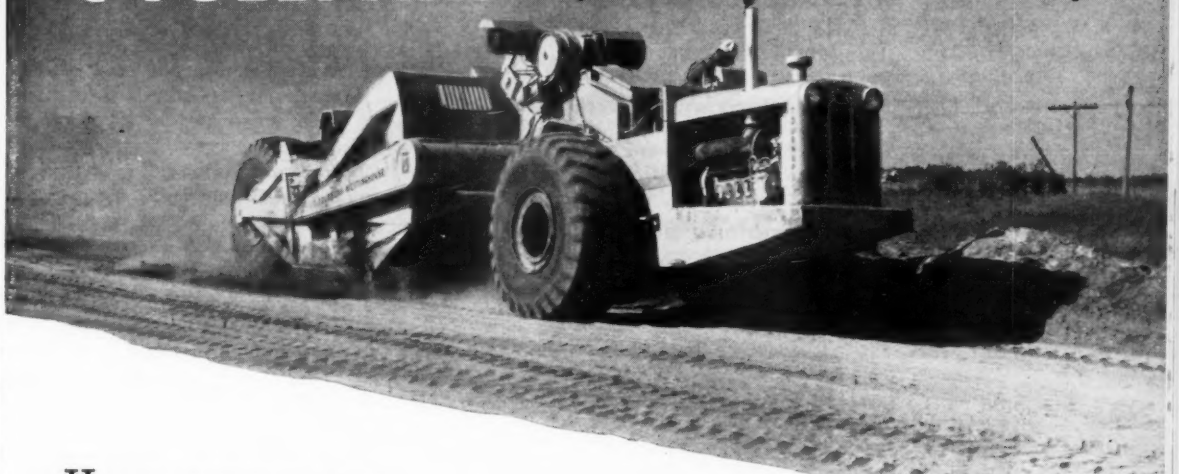
Twenty-one "precipitrons" comprise a network of electric air purifiers generating 12,000 volts to cleanse the air of 93 per cent of its dirt particles. The dirt is actually magnetized as the air is sucked into the building by two 14-foot fans on the roof, and then the particles are held to thin wire electrostatic filters.

After the air is purified, it is compressed into giant refrigerating or heating units and then constantly circulated throughout the building.

The system can handle 627,000 cubic feet of air per minute. The direction of the sun's rays will not affect the interior temperature of the building. In the morning when the sun heats the east end, the zone-control unit will cool that section by automatically lowering the temperature on the east side.

The building is owned by Seagram.

C FULLPAKS' 4th gear haul-spread-return speeds Minnesota road job



High work speed of two LeTourneau-Westinghouse 18-yd. Fullpaks has helped R&K Contractors, Inc., Fargo, N.D., get back on schedule with a Minnesota highway rebuilding job—delayed for a month by bad weather. R&K's scraper fleet included 2 C Fullpaks and 2 older C Tournapulls of 16 yd. capacity.

16" of rain in 32 days

Work was delayed by heavy rains (total of 16" fell in 32 days). When operations finally started, speed was essential. The firm's contract called for moving 350,000 yds. on 9 mi. of Minnesota Highway 32, between Middle River and Strathcona. All old sub-base material was to be removed and replaced with a sand and gravel mixture.

4th gear on most of cycle

On one 4300' cycle, the 18-yd. "C's" averaged 4 min. 36 sec. They hauled, spread in thin layers, and returned—all in 4th gear. The only 4th gear exception (aside from loading) was for the few seconds it took to make a sharp 180° turn after spreading, when operators shifted to 3rd.

"You can dump 'Pulls in a higher gear than with other rigs," stated Herb Reese, Jr., a partner in the firm. "The new constant-voltage transformer makes it easy to control

the machine when you throttle down. Also, visibility is very good."

"Load in half the time"

"In loading, too, you can't beat the Fullpak," Mr. Reese added. "They'll load in half the time it took with older models."

Gilbert Kranz, Reese's partner agreed that the new "C" loads fine. "That quick release for pumping gets better loads in sand," he said. "You get around easier with these scrapers, because their total weight is better distributed."

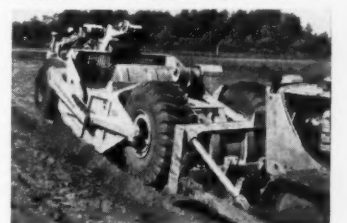
90% efficient for 5 years

The firm looks forward to low maintenance costs with its new Fullpaks, because of the excellent maintenance records of its 5-year old 'Pulls. Their job efficiency since purchase is rated at more than 90%. 5 of the 8 tires on these older rigs are factory-mounted originals.

Get facts and compare

Make it a point to see the new Fullpak at work in your area. Write for full specifications. Compare—and you'll see that this high-production rig offers you more dependable work power, per dollar of investment, than any other scraper now available.

Spreading on the run in 4th gear, at an average speed of 12.6 mph, one of R&K Contractors' C Fullpaks lays a thin sub-base of sand and gravel over a 200' stretch. With haul, spread, and return in 4th gear, these new "C's" completed a 4300' cycle in only 4 min. 36 sec.



Partners Herb Reese, Jr., and Gib Kranz agree: "You can't beat the new C 'Pull for loading." New design of bowl permits easier, faster loading. Material packs well into corners. Positive ejection discharges load completely.



Only slowdown in the fast 4th gear haul-spread-and-return of R&K's Fullpaks occurs as scraper drops to 3rd for the few seconds it takes to make a light 180° turn in roadway. "C" shifts to 4th again, for return.

Tournapull—Trademark Reg. U.S. Pat. Off. CP-1244-H-b Fullpak—Trademark



LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

For more facts, use Request Card at page 18 and circle No. 315



At the east end of the 3.5-mile stretch of Port Allen Canal, a Bucyrus-Monighan 200W dragline, left, shapes up the spoil bank and cuts it to a height of 15 feet. The Bucyrus-Monighan 7W, center, cuts out the ditch and casts the clay to the spoil bank. Another 7W rig cuts the other side of the ditch.

Walking rigs prove worth

during rainy season;

some material moved 1,000 feet

in relocating operation

Giant draglines speed work on

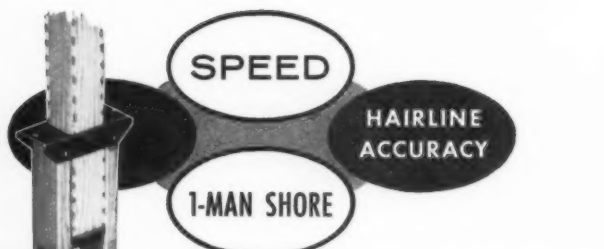


The grandfather of earthmovers, this 1929 walking Monighan with 150-foot boom and Yaun 8-yard bucket works on the first stage of excavation of Port Allen Lock. This rig weighs 500 tons and is powered by a Busch-Sulzer 400-hp diesel.

Giant walking draglines step in where other earthmovers fear to tread. A case in point was the first stage of the excavation of Port Allen Lock where two big Monighans kept dirt moving through a rainy spring season that would have bogged down rubber-tire or even crawler equipment.

The Port Allen Lock, located on the

right bank of the Mississippi River about a mile south of Port Allen, La., will be an important structure in a \$20 million extension to the Gulf Intracoastal Waterway. The project, designed and supervised by the U. S. Army Corps of Engineers, includes building 18.8 miles of the Port Allen Canal which will connect the lock to the existing route, Bayou Plaquemine.



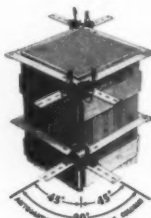
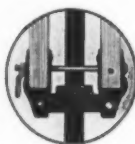
ROOSHORS EXTENSION TYPE

No other shore has had such universal acceptance as the Rooshor, Extension Type. A standard, adjustable Rooshor, the Rooshor, Extension Type, has a flat steel head for use under stringers or beams. For heights more than 14 ft., an S4S 4 x 4, of any length, may be inserted in the top of the Rooshor.

From coast to coast, and abroad, too, Rooshor is the accepted shore for speed, dependability and hairline accuracy. Its the labor you save that makes the difference . . . you save more labor with Rooshors.

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WITH ROOS COLUMN CLAMPS...**

Two identical hinged units . . . no right or left, no wrong way to use them . . . that's the Roos Column Clamp. A hammer is the only tool needed for installing. Perfect squaring is assured.



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For more facts, use coupon, or Request Card at page 18 and circle No. 316

IT'S THE

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ANNOUNCING the Sensational NEW miller GOLD STAR SR

It **DELIVERS** maximum arc stability for:
a. Sounder, denser welds - and more of them - in less time, with . . .

- b. ALL electrodes, in . . .
- c. Any and all positions

How is this performance possible? THE MILLER GOLD STAR SR introduces a . . .
NEW transformer

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NEW completely sealed semi-metallic rectifier

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Tested across the country by practical, critical, hard-bitten working weldors, here's what they say about the new Miller GOLD STAR SR:

- "It's the DC performance I've always wanted"
- "here's DC welding current that's . . . perfect!"
- "positively handles ALL electrodes better"
- "best deal I've seen for v and o work"
- "easiest arc starting in my experience"
- "smoothest arc I ever used . . . and . . . quiet!"
- "It's just plain the MOST"

Complete particulars on the MILLER GOLD STAR SR, including inert gas and automatic fixture welding, is now available on request.

" . . . if it's Miller you know it's the finest . . . "

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CONTRACTORS AND ENGINEERS

Work on canal and lock project



The other rig working on the first stage of excavation of Port Allen Lock is the Bucyrus-Monighan 200W with a 140-foot boom and Yaun 6½-yard bucket. This rig and the 1929 Monighan moved 700,000 yards of dirt for the canal.



A P&H 655B crane (right) lifts steel to a dolly on Morley Bridge which will carry the Texas & Pacific Railroad over the canal. The dolly will deliver the steel to the rail-mounted stiffleg derrick, which in turn will place the steel.

at Indian Village. This lock and canal will allow navigation to bypass the small Plaquemine Lock which restricts shipping.

The reinforced-concrete lock is a U-frame-type structure with a base slab resting on the natural silty soil. The lock contains an 84-foot-wide x 1,200-foot-long usable chamber that has 68 to 70-foot-high walls. Water is

fed into the chamber by gravity through a culvert and valve system in the lower portion of the chamber wall. The lock is capable of lifting barges a maximum of 36 feet from ground level into the Mississippi.

Working under a subcontract from T. L. James & Co., Inc., Ruston, La., which has the \$11,747,000 prime contract for the lock, Walter P. Villere

Co., New Orleans, handled the first stage of the excavation. As the contractor started work in the height of the spring rainy season, two big Monighans were chosen as the most efficient means of moving the 700,000 cubic yards of dirt.

One of these machines, a walking Monighan with a 150-foot boom and a Yaun 8-yard bucket, had been mov-

ing dirt since 1929 and was still going strong. This grandfather of earth-movers weighs 500 tons and is powered by a Busch-Sulzer 400-hp diesel. The other walking rig was a Bucyrus-Monighan Model 200W using a 140-foot boom and a Yaun 6½-yard bucket.

The Monighans excavated the 660 x
(Continued on next page)

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M-5000 STACK-UP

A REVOLUTIONARY NEW ASPHALT PLANT

HIGHER CAPACITY • LOWER COST

Ruggedly built McCarter plants are tops in speed, production and portability. Advanced designing and flexibility guarantee lasting profitable service.

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Capacities of 150 to 200 T.P.H.
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THE McCarter IRON WORKS, INC. NORRISTOWN, PA.

A NEW, **BIG**, 4-Cycle Single Cylinder Air-Cooled Engine... **the WISCONSIN 12½ hp. MODEL AGN**

by Engine Specialists



Model AGN Engine with Clutch Assembly. Also available with stub shaft or with Reduction, Clutch Reduction and/or Electric Starting

• It takes full-time engine "know-how" and full-scale engine manufacturing concentration to design and produce engines of outstanding character and Performance Ability.

The new Wisconsin Model AGN 12½ hp. engine is the product of this unbeatable combination. *Engine specialists designed it. Engine specialists are building it.*

Putting 12½ hp. into a single cylinder air-cooled engine calls for basic *High Torque* . . . the load-holding *Lugging Power* that keeps the equipment *working* through sudden shock loads. It also calls for heavy-duty construction in all details . . . plus dependable cooling under all weather conditions from sub-zero to 140° F.

Bulletin 5-216, just off the press, will give you details about Model AGN. Write for it.

WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN

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For more facts, use Request Card at page 18 and circle No. 319

(Continued from preceding page)

2,100-foot hole to about 15 feet below natural ground. The undesirable material was placed in temporary spoil areas, and the suitable material was either stockpiled near the excavation to be later used in the random back-fill, or rehandled to build up the levee guide walls. The size of the excavation generally made it necessary to rehandle the material two or three times. In building up the north and south guide levees, which tied the lock in with the existing levee, the draglines had to rehandle the material as much as four times to move it about 1,000 feet. In building up the levees, the rigs placed the material in 1-foot lifts, with International and Allis-Chalmers tractor-dozers making three passes over the lift to obtain the necessary compaction for a Type 2 fill.

Second stage excavation

The second stage of the excavation will carry the hole down to a maximum depth of 61 feet below ground level. This part of the excavation will be handled by draglines loading into hauling units in the hole.

An extensive dewatering system will be necessary to accomplish the second stage of the excavation. Independent Wellpoint Corp., Vidalia, La., and T. L. James in a joint venture will handle the million-dollar-plus contract. Thirty temporary relief wells will be drilled to an average depth of 200 feet around the perimeter of the excavation, and 8 permanent relief wells will be drilled west of the lock. Three stages of wellpoints will be used on the slopes.

Port Allen Canal

Monighans have also been working on a 3.5-mile stretch of canal located about two miles west of the lock. Atlas Construction Co., Inc., Vidalia, La., a subsidiary of T. L. James & Co., Inc., has the \$492,000 contract to move the 3.5 million cubic yards of dirt in this section. The canal has a bottom width of 125 feet with 3 to 1 side slopes rising up to natural ground. The depth of the canal varies between 22 and 27 feet.

To clear a 1,000-foot-wide swath through the thickly wooded route of the canal, the contractor made good use of eight Allis-Chalmers HD-21 tractor-dozers equipped with protecting cages for the operators. The tractors dozed down the trees and pushed them out to the edge of the right-of-way where they were later covered over by spoil.

Working at times in 2 feet of mud, three Bucyrus - Monighan walking draglines kept the excavation moving along. Normally, a Model 7W Monighan worked one side of the ditch, while another 7W, working several hundred feet behind, excavated the other side of the ditch. The draglines swung their buckets to a spoil bank located 270 feet from the center line of the canal. A 200W Monighan was used to shape up the spoil bank and cut it down to the allowable 15-foot maximum height. Three Allis-Chalmers HD-21 tractor-dozers assisted in

Chunky clay, hauled in by dump trucks from a borrow pit, is leveled off for the highway detour by a Caterpillar D7 tractor-dozer. This detour is made necessary by the building of a new highway bridge that will carry State Route No. 1 over the canal.



Partners Joe Duncan (left), and Johnie Arnett, Corsicana, Texas.

"THEY GET A FULL SHARE OF CREDIT FOR"

Our Allis-Chalmers equipment has proved it can move dirt at low cost . . . and let us be low bidder time after time!"

Joe Duncan
Arnett & Duncan
Corsicana, Texas

Now building their 19th earth-fill soil conservation dam, Arnett & Duncan operate an equipment spread that includes both Allis-Chalmers motor scrapers and crawler tractors.

"With our Allis-Chalmers equipment, we can dig, haul and place dirt for a lower-per-yard cost . . . move as much dirt as higher-rated-capacity units," says Mr. Duncan. "The maneuverability and speed of our

TS-360's and TS-260's cut cycle time, and the curved bowl bottom feature has brought a real boost to loading efficiency. Incoming dirt breaks up and rolls into the bowl for larger heaped loads.

"Our operators like our Allis-Chalmers equipment, too, because of the operating ease, riding comfort. You get a lot more production when your crew likes the equipment."



TS-360 motor scrapers (15 yd struck; 20 yd heaped), like that shown at left, are the "big guns" of the Arnett & Duncan fleet on earth-fill dam construction. Working with the TS-260's (11 yd struck; 14 yd heaped), they help make a high-production, low cost-per-yard team.

Top crawler tractor for these go-getting Texas contractors is the Allis-Chalmers HD-21—a product of 17 years of torque converter experience.

shaping the spoil banks and did miscellaneous work.

In spite of the rain and the mud, the operation kept going around the clock, seven days out of the week. When the weather wasn't too bad, the draglines moved 25,000 cubic yards of material in one 24-hour day.

Morley Bridge

Work is progressing on the superstructure of Morley Bridge which carries the Texas & Pacific Railroad over Port Allen Canal at a point about midway between the new lock and Indian Village. Austin Bridge Co., Dallas, Texas, has the \$921,237 con-

tract for the vertical lift bridge. The ten reinforced-concrete piers and two abutments of the bridge are founded on timber piling. The bridge has a lift span of 150 feet, that can be raised 73 feet above the water.

Steel for the bridge arrives by rail and is stockpiled beside the tracks by a P&H 655B crane. When the individual members are needed, the crane lifts them to a dolly which rides the rails to a stiffleg traveler derrick. The derrick, with a 126-foot boom, places the steel.

Highway, railroad detour

Morrison Engineering & Contract-

ing Co., New Roads, La., is building a 3,000-foot detour to be used by vehicular traffic and the Texas & Pacific Railroad. The detour is made necessary by the construction of the highway bridge and the vertical lift railroad bridge that will carry State Route No. 1 and the T. & P. branch line over the canal just west of the lock.

Material for the subgrade is hauled in by dump trucks that are loaded by a Lorain dragline working in a nearby borrow pit. A Caterpillar D7 tractor-dozzer, assisted by an Allis-Chalmers motor grader, levels off the chunky clay dumped by the trucks. The base

is then aerated with disks and rolled with a sheepsfoot to bring it up to 95 per cent compaction. For the roadway section of the detour, a 10-inch base course of sand, clay, and gravel will be surfaced with 3½ inches of asphaltic concrete.

Personnel

The project is under the direct supervision of the New Orleans District of the U. S. Army Corps of Engineers. William H. Lewis is the district engineer. C. E. Jones is project engineer for the Morley Bridge, canal excavation, and the highway and railroad detour. Felix C. Austin is project engineer for the Port Allen Lock. Martin G. Chitty is field assistant to the district engineer.

For the lock contract held by T. L. James, Henry Spohrer is project manager. For the canal excavation held by Atlas, Hough Randolph is project superintendent. On the Morley Bridge, Bill E. Jessup is assistant engineer for the Texas & Pacific Railroad.

THE END

Hercules Motors names chairman, president

Top-level executive changes in the Hercules Motors Corp., Canton, Ohio, have been announced following a meeting of the board of directors. The changes became effective the first of this month.

William L. Pringle, formerly director of engineering for the Long Mfg. Division of Borg-Warner Corp., is the new president succeeding John C. Keplinger. Mr. Keplinger will retain his position as director of the company and will continue as an executive consultant.

Henry H. Timken, Jr., chairman of the board of the Timken Roller Bearing Co., was elected chairman of the board of Hercules. He succeeds Charles Balough, who has severed his connection with the firm.

Walter F. Rockwell, chairman of the finance committee of the Rockwell Mfg. Co., has been named a director of the Hercules company. He succeeds Raymond W. Loichot, who has resigned.

Pa. highway department names special investigator

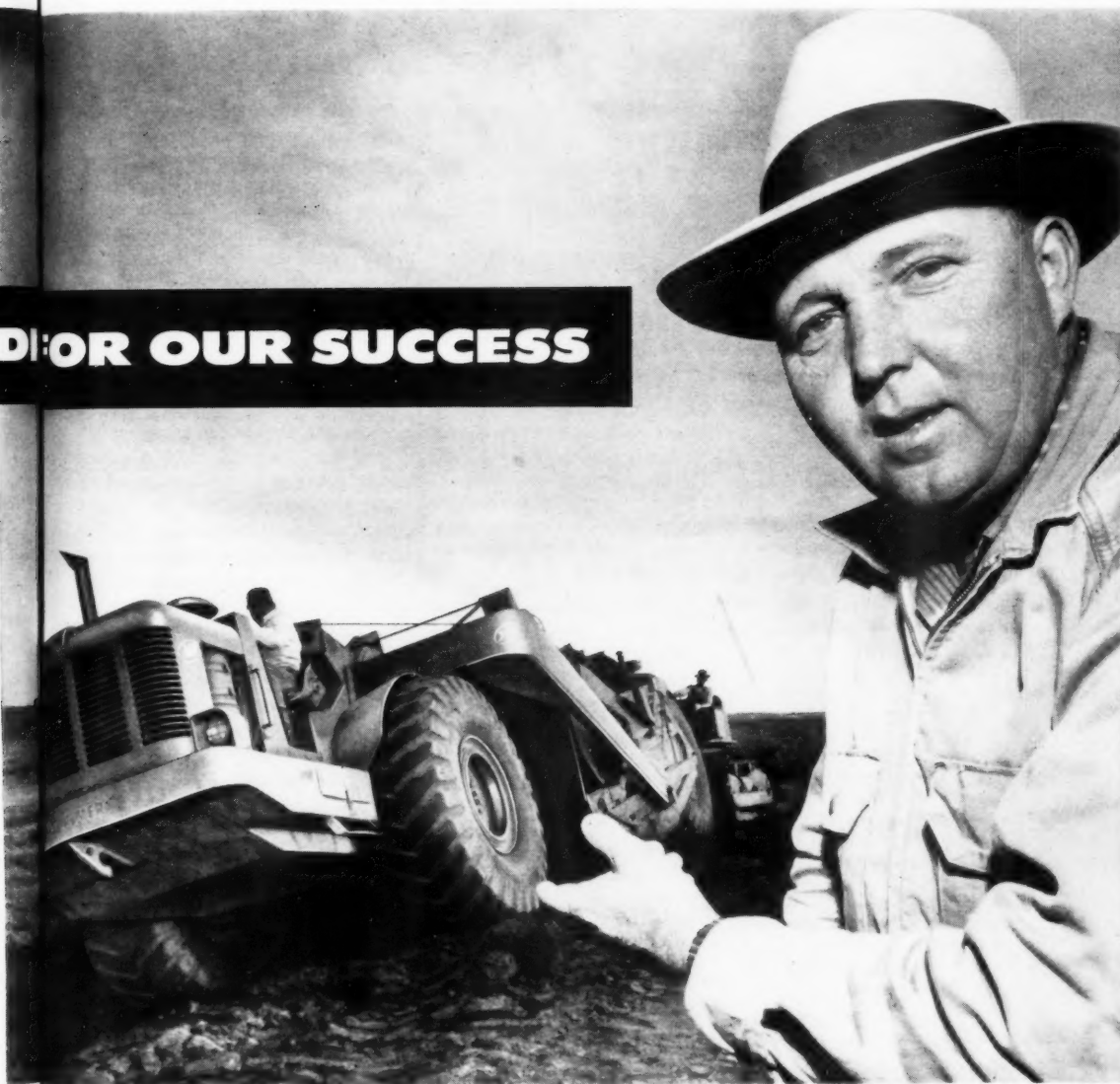
Robert R. West has been named to head a newly established special investigation unit in the Pennsylvania Department of Highways. The unit will handle all investigations pertaining to material procurement, equipment leasing, irregularities in fiscal accounts, and related matters.

For the past year West has been assigned to the state attorney general's office as a special agent.

The Department of Highways also appointed James M. Curran and Howard F. Kline assistant highway maintenance superintendents in Clinton and Lancaster counties, respectively. At the same time, Harold Evans and Gerald Greenberg were made highway design assistants. Francis S. Dell was appointed traffic engineer assistant in the highway planning division.

←For more facts, circle No. 320

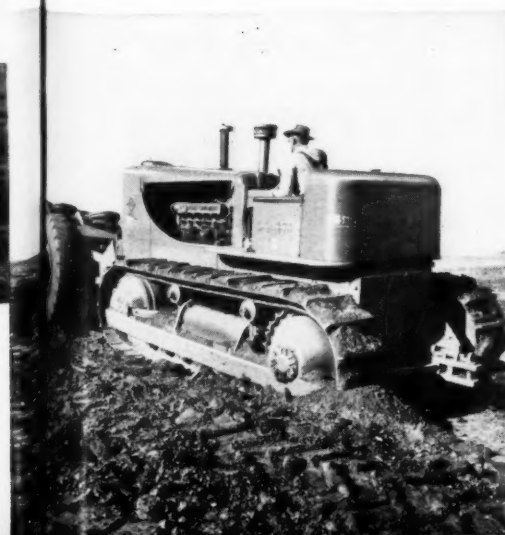
EDITOR OUR SUCCESS



Find out for yourself how the productivity of Allis-Chalmers construction machinery can help improve your profit picture as it has for these Texas contractors. Ask your dealer for all the facts—and a demonstration of real dirt-moving efficiency. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

Engineering in Action





The Cat D9, which uses the rear-mounted hydraulic ripper attachment to break up the sandy shale, does double duty in push-loading a Cat DW21 scraper during the relocation of an interstate highway under the new road program.

Rippers and scrapers spur road excavation

Shovels are eliminated as rippers break up sandy shale; tractor-dozers and motor graders team to spread fill

One of the first Pennsylvania projects to be built under the new interstate highway program is now taking shape near York Springs, Pa., where Hempt Bros., Camp Hill, Pa., is relocating 2.8 miles of U. S. 15. This \$1,500,000 job, which also calls for construction of a semi-cloverleaf to connect with State Route 94, involves only 300,000 cubic yards of roadway excavation, with no borrow.

No shovels required

Sparking the earthmoving operations is a Caterpillar D9 tractor-dozzer equipped with a rear-mounted hydraulic ripper, which has eliminated the need for shovels on the project. The material being excavated for use in various fills consists of a sandy shale that is easily ripped and broken up by the powerful ripper attachment. This allows a simple, but fast-moving scraper fleet to pick up the material.

The scraper fleet consists of three Caterpillar DW21 and three pull-type scrapers. Three Cat D8 tractors are

Here's why torque converter equipped machines do more work at lower operating cost

For higher work capacity on any given load, and for greater all-round daily production, more and more contractors are specifying torque converter drives in their new excavators, erecting cranes and loaders. And here are five good, profitable reasons why the torque converter is the preferred type of drive:

1. The torque converter eliminates lugging and stalling... permits engines to work at maximum efficiency delivering constant high-horsepower output for heavy digging loads and fast swinging.

2. Smooth converter power reduces peak loads throughout the machine's drive train because fluid within the converter absorbs much of the impact energy caused by quick drum speed change... thus protecting both driving and driven equipment.

3. When necessary, the torque converter smoothly delivers approximately twice normal torque to the drum, which, at slow digging speeds, represents an important advantage in power delivered to the dipper.

4. Cable life is extended since no sharp impact loads ever reach cables through the torque converter... constant line tension is maintained... there's no jerking or snapping.

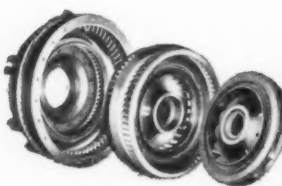
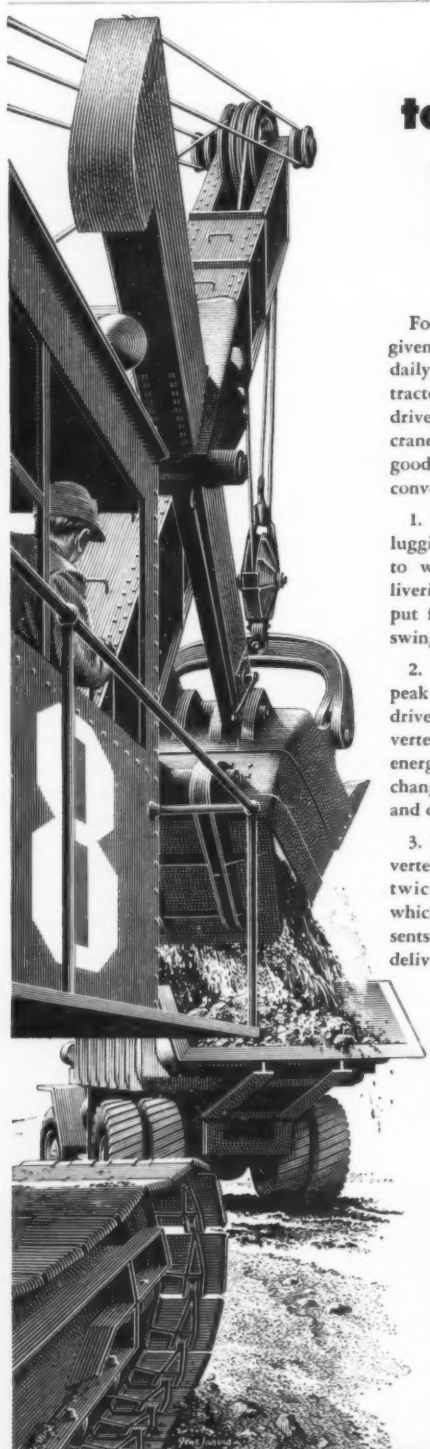
5. An infinite variety of ratios is available to work with... permitting smooth, accurate, safe control of loads and delicate "inching" and "holding" under power... as well as adjusting for wide variations in dipper loading, substituting greater digging effort for speed, when required.

Wherever earth and rock are moved, wherever steel is erected, you'll find contractors using these five advantages... to convert their horsepower into greater-than-ever profits!

...

Twin Disc Torque Converters—three-stage or single-stage, from 30 to 1000 hp—are available from all leading manufacturers of heavy-duty machines. Be sure to specify one in your next unit. Take advantage of the five reasons why torque converter equipped machines do more work at lower operating cost.

Twin Disc is the world's leading manufacturer of friction clutches and fluid couplings for heavy-duty industrial applications... and the only manufacturer producing both three-stage and single-stage torque converters. Because of its complete line of industrial drives, Twin Disc can offer unbiased recommendations for any heavy-duty power transmission application.



TWIN DISC
Torque Converters

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Rockford, Illinois

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CONTRACTORS AND ENGINEERS



A ramp of the semi-cloverleaf, which runs through a farm to link U. S. 15 and State Route 94 near York Springs, is fine graded by this Cat No. 12 motor grader. The work was included in the \$1,500,000 contract for the road relocation.

used to pull the two Allis-Chalmers 18-yard scrapers and the LeTournau-Westinghouse 12-yard scraper. The Caterpillar D9 is being used to push-load the scrapers to capacity. The various fills, the largest of which is 25 feet, are being spread by Caterpillar D8 tractor-dozers and graded by two Caterpillar No. 12 motor graders. Compaction is being handled by three Huber-Warco 10-ton, 3-wheel rollers.

Lubrication

The contractor is using a Chevrolet truck, equipped with a 300-gallon tank for fuel storage and a 100-gallon tank to transport diesel oil, to handle the lubrication of the equipment scattered throughout the project. The truck also carried five 1-gallon cans of Zerone anti-freeze during the past winter months to assure needed protection to each piece of equipment. An Alemite lubricating hand-pump is used by the mechanics periodically to grease the tractors and the two Unit backhoes that excavated the drainage ditches. Gulf oil and lubricating products are being used exclusively on this project.

About a half-mile of State Route 94, at the grade separation connecting with the new road, is being reconstructed as two 24-foot roadways separated by a 4-foot reflectorized concrete divider. This stretch will be paved with a 2½-inch asphaltic-concrete wearing surface, while the connecting ramps of the cloverleaf will be of 24-foot-wide and 10-inch-thick reinforced concrete.

The new interstate road, which will span over Route 94, will consist of two 24-foot reinforced-concrete roadways 10-inches thick and will be separated by a 20-foot grassed median strip. Ten-foot-wide stabilized shoulders will flank both roadways.

Personnel

John Anderson, the superintendent for Hempt Bros., uses a General Electric radio base station in his L. B. Smith office trailer to keep in constant touch with the mechanics, engineers, and foremen throughout the job. John M. Seaks is the resident engineer for the Pennsylvania Department of Highways, which has Joseph J. Lawler as secretary.

THE END

For more facts, circle No. 323→



Someone is going to get taken for a ride

A Materials Interchange Plan can make it happen sooner—and make it a happy one . . . with 65 million cars on the highway—20 million more in 10 years—someone is getting taken for a ride . . . every minute of every day. Let's make it a happy ride. Current highway construction programs can do it. A *Materials Interchange* design and specification plan that includes Asphalt can help grandma get taken for a pleasant ride sooner.

Here's what at least one Midwest state is doing about it: Highway authorities have drawn plans for alternate types of construction. Materials available at the time of construction will be used. No time is lost in this construction program. No experienced engineering manpower is lost rewriting specs and redesigning projects.

Make this your plan. Employ *Materials Interchangeability* so that roads under your authority may be built from materials available at time of construction. Include Asphalt in your construction planning.

Remember these facts: Standard Oil produces Asphalt at four convenient Midwest locations. Tank car and tank truck deliveries are made to you from the Standard Oil refinery nearest your job. Technical Service on Asphalt for highway construction is provided by Asphalt construction specialists who work out of 23 Standard Oil offices all over the 15 Midwest and Rocky Mountain states. Standard Oil has a record of taking care of its customers demonstrated by its delivery on contracts in times of short supply as well as when materials are plentiful.

Get more facts about STANDARD Asphalt from the Standard Oil office nearest you. Or write Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.





The specially-built Macco Corp. gantry travels out on the trestle with another 40-ton section of reinforced-concrete pipe. Made at the Baldwin Park, Calif., plant of United Concrete Pipe Corp., the pipe is used in cooling water circulating lines for Los Angeles Department of Water & Power's Scattergood steam plant.

Specially-built gantry crane rides rails to lay discharge, intake lines for plant

Installation of the cooling water circulating lines in the Pacific Ocean is one of the more interesting phases of construction of the Los Angeles Department of Water & Power's Scattergood steam plant. This \$60 million plant near El Segundo, Calif., is being constructed as part of a comprehensive expansion program to meet Los Angeles' demands for more power for

domestic and industrial use.

A 1,944-foot-long intake line and 1,558-foot-long discharge line are being installed by Macco Corp., Paramount, Calif., under a \$3 million contract. The longer line will take cool water from the ocean; the short line will discharge the water into the ocean. Macco Corp. began by building a 1,992-foot trestle, starting at the beginning of the line, about 200 feet up the beach from the water line. It extends about 50 feet beyond the terminal point of the longer line in the ocean. The trestle is made of timbers, except for the last 500 feet which is steel. It carries three steel rails for 1,608 feet and two rails for the last 384 feet beyond the terminal point of the discharge line.

A specially-built gantry crane uses the center rail and one outside rail while transporting and laying the discharge line; the center rail and the other outside rail while laying the intake line. A transfer table near the pipe storage ramp enables the gantry to shift from one side to the other.

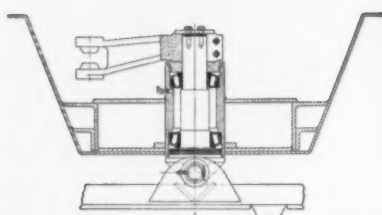
Two cranes, equipped with clamshells, travel the same rails as the gantry, one digging the intake line trench and the other the discharge line trench. Macco designed and built an eductor which travels the rails between the two excavating cranes which empty the loads into the eductor's hopper. The eductor chutes to one side all material too large for its 10-inch dredge pump and pumps the balance through a steel line beyond the gantry to backfill the pipe as it is laid.

Each 40-ton section of pipe, produced by United Concrete Pipe Corp., arrives on low-bed truck trailers and is rolled off the trailer onto a ramp, the same height as the trailer, connecting with the trestle. A pipe section is winched along the ramp to the trestle and onto a roll table. Here, the 12-foot-long, 144-inch outside-diameter pipe is prepared for laying with the rubber gasket placed on the spigot end. The gantry picks up the pipe and moves to the next laying position.

The gantry first lowers the pipe section into the water at approximate position. The diver then descends to telephone instructions to the crane operator to guide the new pipe section home, and to see that the joint is in good order.

Trench excavation ahead of the pipe and backfilling as the pipe is laid is a continuous process.

When completed in January, 1958, the intake line will be 1,944 feet long and the discharge line, 1,558 feet. Each line will terminate at a structure with a vertical riser reaching to about 15 feet below the surface of the ocean. The longer line will have a riser about 35 feet high from a 50-foot depth.



How TAMPO MANUFACTURING COMPANY mounts front bolster king pin assembly of its Model SP-11S Roller on Timken bearings to insure easy steering under heavy, varying loads.



Steers 11 tons one-handed with TIMKEN® bearings to absorb the heavy, varying loads of uneven ground

It takes more than power steering to keep this new 11-ton Tampon Model SP-11S Roller in a straight line on uneven surfaces. To keep the front bolster assembly rigid, allow easy, sure steering under heavy and varying wheel loads, Tampon engineers mount it on Timken® tapered roller bearings. And they use Timken bearings at 18 other vital points on wheels and axles.

Tampon and other leading construction equipment manufacturers use Timken bearings because:

LOADS NO PROBLEM. Timken bearings' tapered construction lets them take all combinations of radial and thrust loads. And full-line contact


between rollers and races gives Timken bearings *extra* load-carrying capacity.

REDUCE MAINTENANCE. Because they hold shafts concentric with housings, Timken bearings make closures more effective. Dirt stays out, lubricant in.

PROVIDE LONGER LIFE. Geometrically designed to roll true and precision-made to live up to their design, Timken bearings practically eliminate friction. They *roll* the load. Bearings and related parts last longer.

To further insure bearing quality, we make our own fine alloy steel. No other American bearing maker

does. To get all these advantages, specify bearings trade-marked "Timken". The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ont. Cable address: "TIMROSCO".

 This symbol on a product means its bearings are the best.



TIMKEN

TAPERED ROLLER BEARINGS ROLL THE LOAD

For more facts, use Request Card at page 18 and circle No. 324

PRODUCT PARADE

For further information on any of the products described in the following section, circle the designated number on the Request Card at page 18.

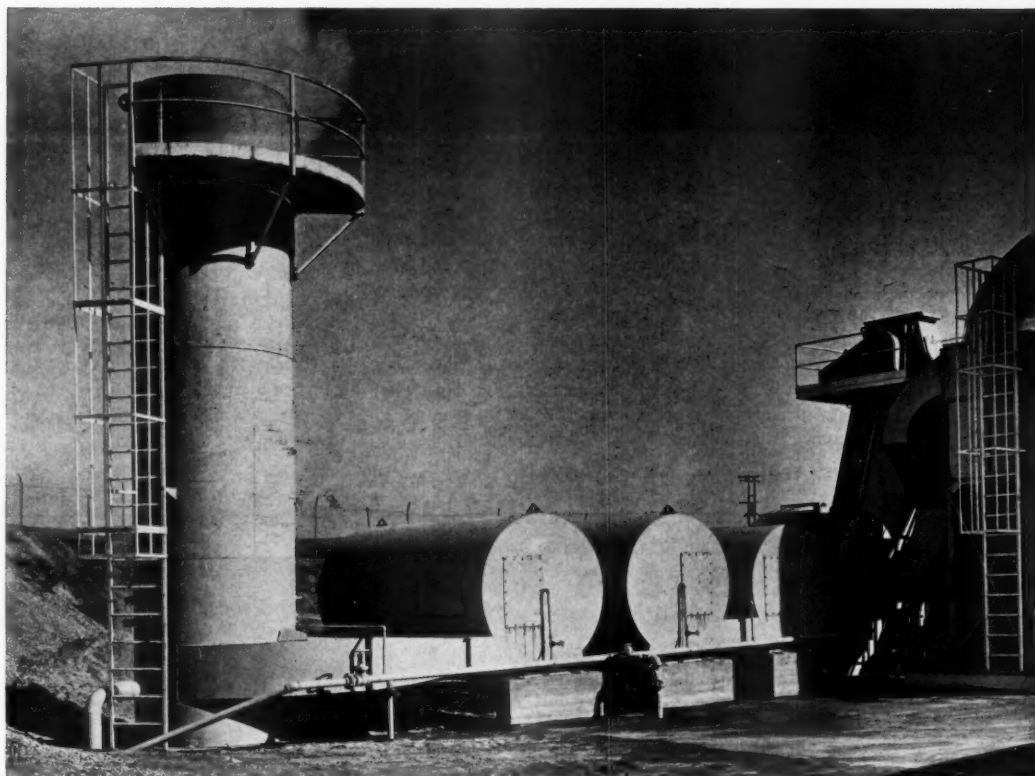
Triple tube system washes asphalt dust

Its new triple wet tube dust washer for asphalt plant dryer exhaust is announced by the Madsen Works, Construction Equipment Division, Baldwin-Lima-Hamilton Corp.

Under the action of water sprays, the dust-laden hot air and gases from the dust collector exhauster spiral rapidly through the three tubes in series, finally passing through a large-diameter stack equipped with one final washing spray.

Sludge removal is provided at the base of the stack through a 6-inch-diameter outlet.

For further information write to the Madsen Works, Construction Equipment Division, Baldwin-Lima-Hamilton Corp., Dept. C&E, 14120 E. Rosecrans Ave., La Mirada, Calif., or use the Request Card at page 18. Circle No. 176.



Off-the-highway giant shoulders 64-ton load

Its new rear-dump semitrailer with a rated payload of 64 tons or 40 cubic yards struck is announced by the Kenworth Motor Truck Co.

Designated Model 803-B, the new unit is powered by a single 12-cylinder diesel engine available in either a 400 or 600-hp version.

The 803-B tractor features front and rear axles of Carcometal, a special high-strength cast steel. Front-axle capacity is 50,000 pounds, and rear-axle capacity is 100,000 pounds.

Measuring 41 feet 11 inches from the front of the bumper to the rear of the single-axle semitrailer, the 803-B has a turning radius of 37 feet with a turning angle of 30 degrees.

The 18:00x33 tires used on all axles are approximately 6 feet in diameter.

For further information write to the Kenworth Motor Truck Co., Dept. C&E, P. O. Box 3505, Seattle, Wash., or use the Request Card at page 18. Circle No. 177.



Self-propelled compactors feature vertical oscillation

Its 9-ton and 11-ton Vertical-Pak self-propelled pneumatic compaction roller is offered by the Construction Machinery Division, Southwest Welding & Mfg. Co. The new roller affords oscillation through the vertical action of the rear wheels.

The Vertical-Pak places the operator in a position to see both forward and reverse equally well at speeds in both directions up to 15 mph. The machine is 13 feet 1 inch in length,

78 inches high, and 34 inches wide.

The unit is available in both 11-ton, 11-wheel models, and 9-ton, 9-wheel models. Diesel power or a 50-hp gasoline engine is available. Tires are 7.50x15, 4-ply.

For further information write to the Southwest Welding & Mfg. Co., Construction Machinery Division, Dept. C&E, 3201 W. Mission Road, Alhambra, Calif., or use the Request Card at page 18. Circle No. 37.



Five feet in diameter and 10 feet long, the Lull Super Sweeper can handle up to 12 inches of snow. This broom is hydraulically controlled and driven; power is furnished by its own separate internal combustion engine, mounted directly behind the truck cab. For further information about the Lull Super Sweeper, write to the Lull Engineering Co., Dept. C&E, 3045 Highway 13, St. Paul 11, Minn., or use the Request Card at page 18. Circle No. 139.

New scraper features 13-yard struck capacity

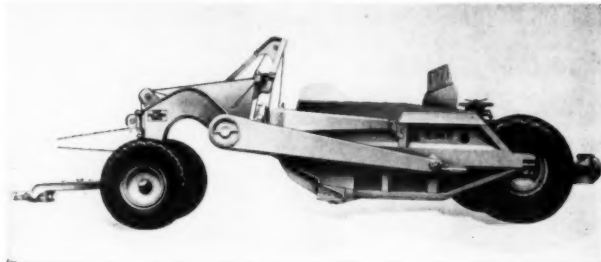
Its No. 435 Lowbowl scraper for use with the Cat D7 tractor is announced by the Caterpillar Tractor Co.

The new 4-wheel scraper, which replaces the Caterpillar No. 70 scraper in the company's line, incorporates many operational and dimensional features which result, according to the company, in higher production and a resultant lower cost per yard of earth moved.

As with the other Caterpillar Lowbowl scrapers, the low silhouette of the No. 435 allows material to enter the scraper with a minimum of lift-

ing effort and material-to-material friction. On a comparative basis, the No. 435 offers 38.6 square feet of bottom area to 31.9 square feet for the No. 70, an increase of 6.7 square feet for the new scraper. This increase helps to provide the new unit with a struck capacity of 13 cubic yards, an increase of 27 per cent over its predecessor model.

Because of its additional width, the No. 435 scraper provides a broader base for heap loading, and can transport 18 cubic yards of heaped material.



The new Cat No. 435 scraper.

In addition, the wider base of the scraper increases the width of cut to 9 feet 4 inches from the previous model's 8 feet 6 inches.

For further information write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 23.



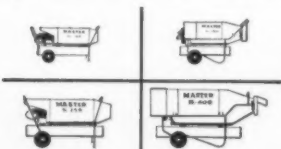
BOSS...
GET THIS
HEATER!

We'll forget the cold weather
and keep your winter profits high

"We won't be slowed down by cold weather. And we'll be a lot more comfortable, too, with a Master heater on the job.

"It puts out a steady stream of warm air wherever you want it. You can plaster, pour concrete, thaw and dry materials, spot heat outside, etc. It's portable, just wheel it around, plug it in and flip the switch. It'll run for 16

hours or more on a tank of kerosene or fuel oil. And for only 30¢ an hour it puts out enough heat to warm the biggest jobs. It's perfectly safe, too, boss... doesn't need a vent. So see your Master distributor, or write for all the facts on the new Master B-250 and other models. You'll see that only Master has all the features you want. No obligation."



100,000; 160,000; 250,000 and 400,000 BTU/hr. units available.

For more facts, use Request Card at page 18 and circle No. 325

MASTER

MASTER VIBRATOR COMPANY
314 Stanley Ave., Dayton 1, Ohio



What size pump would you use?

Selecting a pump would be a major problem, if performances were not specified by AGC standards and guaranteed by Rating Plate.

With AGC standards you have a simple, completely reliable way to know the minimum performance of any rated pump under a range of service conditions. Furthermore these standards guarantee you the engine power and up-to-date design needed to assure satisfactory service life.

To maintain these helpful standards, demand the AGC Rating Plate on any pump you buy.



Demand this Rating Plate for your protection.

CONTRACTORS PUMP BUREAU

Affiliated with The Associated General Contractors of America
Munsey Building, Washington 4, D. C.



BARNES MFG. CO.
Mansfield, Ohio

C. H. & E. MFG. CO.
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CARVER PUMP CO.
Muscatine, Iowa

CHAIN BELT CO.
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CONSTRUCTION MCHY. CO.
Waterloo, Iowa

ESSICK MFG. CO.
Los Angeles, Calif.

PEERLESS PUMP DIVISION
Food Machinery & Chemical Corp.
Los Angeles 31, California

THE GORMAN-RUPP CO.
Mansfield, Ohio

THE JAEGER MACHINE CO.
Columbus, Ohio

WORTHINGTON CORPORATION, Contractor's Pump Division, Plainfield, N. J.

JACUZZI BROS., INC.
Richmond, Calif.

MARLOW PUMPS
Div. of Bell & Gossett Co.
Midland Park, N. J.

MCGOWAN PUMP DIVISION
Leyman Mfg. Co., Cincinnati 2, Ohio

RICE PUMP & MACH. CO.
Belgium, Wisc.

STERLING MACHY. CO.
Los Angeles, Calif.

For more facts, use Request Card at page 18 and circle No. 326

CONTRACTORS AND ENGINEERS



Adjustable deflectors around the fan of the Henderson sand and cinder spreader permit a spreading width of from 8 to 32 feet, depending on the material being used. Rear gate control is within easy reach of the operator.

Offer sand and cinder spreader for ice control

A simplified sand and cinder spreader for ice control is announced as an addition to the Henderson spreader body line.

The cinder spreader can also be added as an attachment to the firm's Chief body line.

Adjustable deflectors around the spreader fan allow the operator to spread from 8 to 32 feet wide, depend-

ing on the material being used. Rear gate control within easy reach of the operator saves operating time.

Optional features are the multiple-disk oil clutch, 2-speed transmission, conveyor chain oiler, hopper screen, and auxiliary engine drive. Semi-trailers in lengths from 9 to 32 feet are available.

For further information write to

the Henderson Mfg. Co., Dept. C&E, 1203 Rockford Road S. W., Cedar

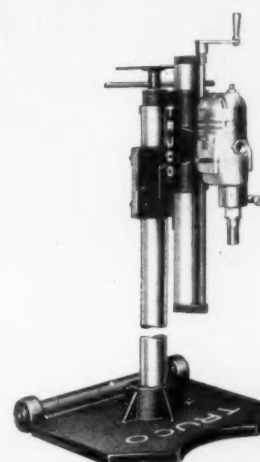
Rapids, Iowa, or use the Request Card at page 18. Circle No. 4.

Diamond drilling unit is compact, portable

A small, lightweight, diamond drilling machine of compact and portable design is available from the Truco Water Swivel Division of the Wheel Trueing Tool Co.

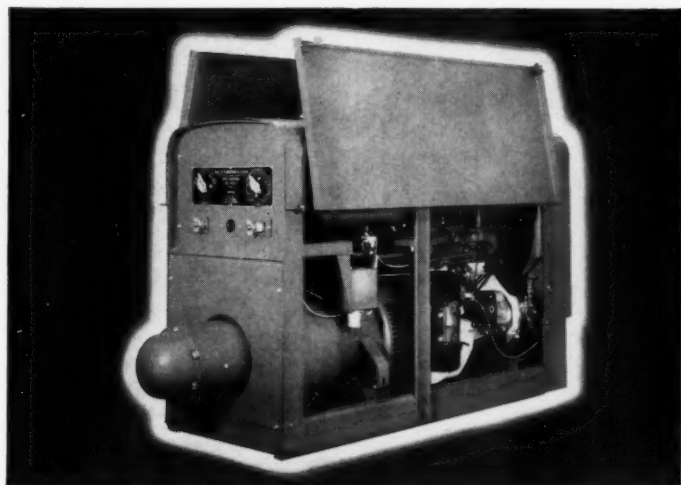
Designated the Truco Model A, the unit consists of an extra-heavy-duty drill motor operating at 1,000 rpm and capable of drilling holes 1 to 5 inches outside diameter in all kinds of masonry materials including reinforced concrete. A water swivel, integral with the drill motor, supplies water to the diamond drill to flush away cuttings. It may be connected to any faucet or to a portable, pressure water tank.

The base is equipped with rollers on the rear edge for easy placement. The column has an integral telescopic screw which permits the unit to be anchored to the floor by bracing against the ceiling for rigidity and for faster drilling and longer bit life. The transverse bar, mounted on a swivel bracket on the column, swings the drilling unit through 360 degrees and can be anchored for drilling in any position.



The Truco Model A.

For further information write to the Truco Water Swivel Division, Wheel Trueing Tool Co., Dept. C&E, 3200-53 W. Davison Ave., Detroit 38, Mich., or use the Request Card at page 18. Circle No. 109.



NEW MODEL OF THE GREAT 6090 (at the same low price)

Shield-Arc 200 has these new features

Extra Horsepower—New 36 h. p. Continental engine (at the same low rpm) insures top output after thousands of hours of continuous, hard use. Also gives full welder performance at high altitudes.

Large Gas Tank—16 gallon capacity allows operation for full 8-hour shift without refueling.

Precise Current Control—Shield-Arc's famous dual control made even more accurate by increasing steps of current selections.

Rugged Base and Housing—Heavy gage steel base, top and doors, and extended housing protects welder from damage through rough use in the field.

Complete specifications are contained in Bulletin SB-1337. Write for it.



THE LINCOLN ELECTRIC COMPANY
Dept. 5317, Cleveland 17, Ohio
The World's Largest Manufacturer of Arc Welding Equipment

For more facts, use Request Card at page 18 and circle No. 327

WHEN WINTER CLOSES IN



BURCH Plows get rid of SNOW fast!

BURCH-built "Ross" Snow Plows have been developed through years of heavy snow plowing experience. Their rolled "Sno-Flo" moldboards easily break through the heaviest drifts—eject snow in a continuous flow. No dead weight—minimum resistance—no side draft.

BURCH-built "Ross" Plows are self adjusting to level or crowned road surfaces by means of their unique swivel push angles. Designed and built to give outstanding performance through many seasons of service.



Models for
Trucks or
Motor Graders

- "V"-Type
- One-Way
- Dozer-Type
- Reversible
- Trip-Type

Write Dept. CE-107
for literature.

The BURCH Corporation
CRESTLINE, OHIO, U.S.A.
MANUFACTURERS OF EQUIPMENT
FOR CONSTRUCTION AND MAINTENANCE
OF ROADS AND STREETS

For more facts, use Request Card at page 18 and circle No. 328



An inexpensive rubber-tired compaction unit, that is installed easily and converts any tandem-drive motor grader into a combination road-maintenance and pneumatic-compactor machine, is The Midland Mfg. Co.'s Graderoll. Effective compaction weight on each of the Graderoll's six tires, when installed on a 23,000-pound motor grader, is 1,536 pounds. The unit delivers effective compaction in one operation following grader blade material distribution. For further information write to The Midland Mfg. Co., Dept. C&E, P. O. Box 534, Columbus, Ohio, or use the Request Card on page 18. Circle No. 20.

HAYNES Alloys solve the tough wear problems

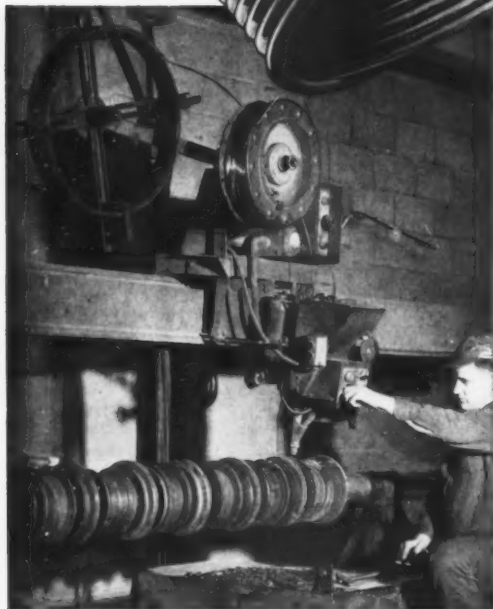
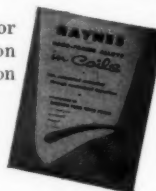


Something NEW in HARD-FACING COILS

Newly developed drawn tube rod in coils
as easy to apply as solid wire...

HAYNES hard-facing rods in coils give you uniformly hard deposits and smoother feeding—yet cost the same as ordinary tube rod. They also assure steadier deposition rates... can be used with standard equipment without nozzle change... meet standard wire tolerances for roundness and concentricity... and withstand the same feed roll pressures as solid wire.

They are available in six alloys for superior protection against abrasion and impact. For complete information send for descriptive booklet. Write HAYNES STELLITE COMPANY, A Division of Union Carbide Corporation, Kokomo, Indiana.



... Especially suited for protection of such parts as tractor rolls and idlers, rock crushing rollers, shafts, sleeves.

See...
or
Write...

Your local
Haynes Stellite Dealer

to
Haynes Stellite Company

Announce two new aggregate plants

Two new aggregate plants are available from the Construction Equipment Division of the Blaw-Knox Co. The P-3150 GAC plant has three equal compartments with each rated at 50 tons capacity, or 33 cubic yards heaped. The plant is especially designed for road-paving jobs where a separate cement plant is required.

The P-5150 GAC is a 5-compartment plant with four bins for aggregates and one for cement. The cement compartment is rated at 225 barrels, while the aggregate capacity is 28 tons for each compartment.

This five-compartment plant is designed especially for ready-mix plants, one-stop block plants, and concrete-paving plants.

Both plants can be equipped with automatic batching equipment.

For further information write to the Construction Equipment Div., Blaw-Knox Co., Dept. C&E, 40 Charleston Ave., Mattoon, Ill., or use the Request Card at page 18. Circle No. 56.

DUDGEON HYDRAULIC JACKS

**SALES
RENTALS**

FOR:

- PILE TESTING
- UNDER-PINNING
- BRIDGES
- PIPE PUSHING
- SOIL TESTING

**CAPACITY
TO
600 TONS**



Write to
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**DESIGNERS and
MANUFACTURERS OF**

Hydraulic Units For Special Applications

**RICHARD
DUDGEON INC.**

700 BERGEN STREET BROOKLYN, N. Y.
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"Haynes," "Haynes Stellite" and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

For more facts, use Request Card at page 18 and circle No. 329

For more facts, circle No. 330

CONTRACTORS AND ENGINEERS

When frost conditions prevail, Tractomotive rippers are recommended for making the loading job easier and faster. The rippers are available in four sizes, one for each of the four Allis-Chalmers crawlers. Ripping depths with standard shanks range from 12 inches on the Model HD-6 to 25 inches on the HD-21. For further information on these rippers, write to the Tractomotive Corp., Dept. C&E, Deerfield, Ill., or use the Request Card at page 18. Circle No. 118.



Multi-purpose additive speeds concrete setting

An integral, multi-purpose liquid chemical emulsion for use in portland-cement concrete and mortars is available from the Insuro Chemical Co., Inc.

Called Insuro, the compound, which is added to the gage water, reduces the porosity of concrete by reducing the water ratio; it fills the pores with insoluble chemicals which nullify the effect of capillary action, and prevents both seepage and penetration of water even against a hydrostatic head of water. The result is a quick setting of the concrete, as well as high-early-strength.

Insuro is also said to be a safe anti-freeze agent. It lowers the freezing point of the mixing liquid and provides heat generation during the hydration of the mix, thus giving warmth to the concrete. Through acceleration of the set, it reduces the time during which protection is required in extremely cold weather.

This additive is recommended for mass concrete, cement coats, portland-cement mortar, and especially in reinforced concrete, as it reportedly has no harmful effect on steel reinforcing at any time.

For further information write to the Insuro Chemical Co., Inc., Dept. C&E, P. O. Box 249, West Upton, Mass., or use the Request Card at page 18. Circle No. 39.

Offer automatic bucket positioners for two rigs

Automatic bucket positioners for the No. 955 and No. 933 Traxcavators are announced by the Caterpillar Tractor Co.

The bucket-positioning feature, long a standard on the Cat No. 977 Traxcavator, automatically moves the bucket-tilt control lever from the tilt-back position to the hold position when the bucket reaches a preset digging angle.

The adjustable linkage provided with the bucket positioner allows the bucket to be positioned at any point between an approximate 5-degree digging angle and a 3-degree tilt-back angle.

For No. 955 and No. 933 Traxcavators already in operation, field changeover kits are available.

For further information write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 34.



CHOSEN AFTER TESTS with competing brands of masonry cement, Atlas Mortar goes into gymnasium, monastery and chapel of Mendel Catholic High School, Chicago, Illinois. Architect A. F. Moratz and Contractor Van Etten Bros. report results fully up to expectations with exact light color desired.

Here's how masons rate ATLAS® MORTAR cement:
"Stays plastic ... has excellent water retention ... provides a strong bond"

- Good mortar workability is a necessary aid to masons in producing serviceable, watertight masonry walls.
- Field results consistently confirm that Atlas Mortar Cement produces excellent mortar workability and also gives high yields.
- Quality-controlled manufacture of Atlas Mortar Cement maintains high product standards and promotes uniform performance and appearance. (Complies with ASTM and Federal Specifications.)

For further information, write Universal Atlas, 100 Park Avenue, New York 17, N. Y.



UNIVERSAL ATLAS CEMENT COMPANY—member of the industrial family that serves the nation—**UNITED STATES STEEL**
OFFICES: Albany • Birmingham • Boston • Chicago • Dayton • Kansas City • Milwaukee • Minneapolis • New York • Philadelphia • Pittsburgh • St. Louis • Waco

For more facts, use Request Card at page 18 and circle No. 331



Hydraulic drill positioner features improved design

An improved model of its Air Trac hydraulic drill positioner is announced by the Gardner-Denver Co.

Designated Model DPAT, the new machine has been designed to provide complete power positioning for all vertical, horizontal, and flat lifter holes. The unit is said to provide a 120-degree mast swing and can be indexed for an additional 90-degree swing. It provides a 90-degree dump and can be indexed for a full 360-degree dump.

Twin hydraulic cylinders provide a T-bar lift of 86 degrees 30 inches, which will bring the T-bar from below horizontal to nearly vertical.

All controls on the Air Trac, for mast positioning, crawler drive, and drilling, are centralized on a single remote-control panel.

For further information write to the Gardner-Denver Co., Dept. C&E, S. Front St., Quincy, Ill., or use the Request Card at page 18. Circle No. 59.

Reversible snow blade has special cutting edge

A reversible snow blade with a spring-trip cutting edge for use with the firm's front-end loaders is announced by A. C. Anderson, Inc.

The cutting edge is designed to trip back and pass over obstacles without dumping snow accumulated in front of the plow. When the plow has eased over the obstacle the cutting edge springs back into position immediately.

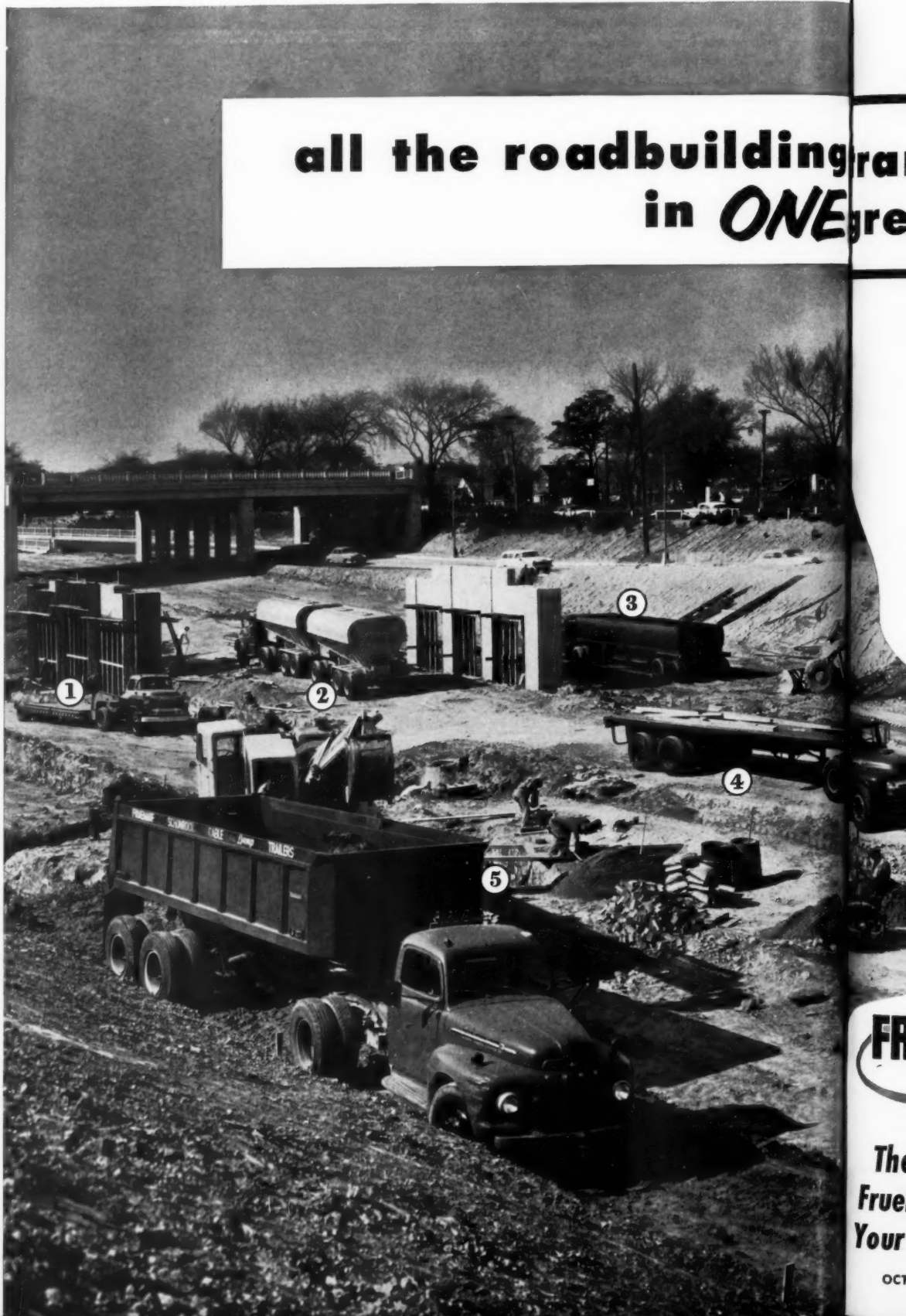
The blade is said to be easily attached on the mounting frame by merely inserting two pins supplied with the frame.

For further information write to A. C. Anderson, Inc., Dept. A-28, Dept. C&E, P. O. Box 391, Airport, Wildwood, N. J., or use the Request Card that is bound in at page 18. Circle No. 134.

Fast snow loading is featured in the Athey 125 HiLoader which has belt-type continuous flow loading. A floating feeder keeps the snow rolling onto the conveyor and permits loading at rates up to 20 cubic yards per minute. This versatile machine, the HiLoader, loads sand, gravel, crushed stone, and other free-flowing materials up to 10 cubic yards per minute. For further information write to the Athey Products Corp., Dept. C&E, 5631 W. 65th St., Chicago 38, Ill., or use the Request Card at page 18. Circle No. 60.



all the roadbuilding gear in ONE





The Clark Wedge-Lok steel paving form.

New steel paving forms feature rigid joints

A new heavy-duty steel paving form is announced by the Paving Form Division of Clark Industries.

Designated Wedge-Lok forms, the sections—made from heavy-duty ¼-inch steel plate—are joined to form a continuous beam, eliminating joint deflection.

Stake pockets, guides, and Wedge-Lok are fully welded; there are no rivets to loosen. The base of the forms is beveled at the ends to negotiate in-

side curves. Stakes are 1-inch diameter high-carbon steel, pointed and hardened by wedges for easy alignment. The stake pockets, Wedge-Lok, and form body are press formed from specially controlled analysis steel. This press forming, coupled with rigid quality control, is said to insure close tolerance and complete interchangeability of parts.

For further information write to Clark Industries, Paving Form Division, Dept. C&E, 375 E. Fifth Ave., Columbus, Ohio, or use the Request Card at page 18. Circle No. 93.

Offer de-icing unit for air-pressure systems

A de-icing device to prevent moisture from freezing up air lines is offered by the Branick Mfg. Co., Inc. According to the manufacturer, the de-icer has no moving parts to get out of order, nor will it lower the efficiency of an air-pressure system.

Compact, and shipped ready for installation, it is designed to be mounted near wall outlets. After cutting into the line, the unit is filled with alcohol and the valve opened.

For further information write to the Branick Mfg. Co., Inc., Dept. C&E, 2600 Third Ave., Fargo, N. Dak., or use the Request Card at page 18. Circle No. 66.

Announce design changes in self-priming pump

Several design changes in its centrifugal self-priming pump are announced by the Gen-A-Matic Corp.

Specifically, re-design of the wear plate, intake assembly, and the return check valve is said to have greatly improved the self-priming feature of the pump. Re-design of the spring-



loaded mechanical seal assembly has eliminated the need to keep water in the pump at all times to avoid damage to the seal.

Built for rugged pumping jobs, the Gen-A-Matic self-priming pump will not clog, however muddy, sandy, or pebble-laden the waters, according to the manufacturer.

For further information write to the Gen-A-Matic Corp., Dept. C&E, 14741 Bessemer St., Van Nuys, Calif., or use the Request Card at page 18. Circle No. 2.

ng transportation you need VE great trailer line!

Movers of roadbuilding materials and machinery have several very important reasons for investing in Fruehauf-built equipment.

- ★ Fruehaufs are engineered for the top payloads and efficiency.
- ★ Fruehaufs are designed simply, for economy in price and upkeep.
- ★ Fruehaufs never become "orphans"—they're backed up by service.
- ★ Fruehaufs of most types are ready for delivery right now.
- ★ Fruehaufs earn extra profits for extra years.

Five different high-capacity, moneymaking Fruehauf Trailers are shown left on the scene of a current roadbuilding project. (1) is a Removable Gooseneck Carryall which permits front end loading and unloading, cuts unloading time of heavy cranes and shovels to less than 15 minutes, and requires no winch with capacities up to 50 tons. (2) is an Airslide® Bulk Cement Tank train, a rapidly-discharging unit noted for the simplicity and economy of its gravity-type unloading mechanism. (3) is a Hopper-Type Dump, one of a variety of rugged, specially designed units, with capacities up to 14 cubic yards, to haul such materials as sand, crushed stone, bulk cement, and other aggregates. (4) is a heavy duty Platform Trailer for machinery and heavy building materials, ruggedly designed for "plus" payloads. (5) is a Fruehauf-Schonrock Cable Dump, profitable because of its extremely light weight which permits payload bonuses of up to 4,000 pounds.

*Trademark—Fuller Co.

FRUEHAUF TRAILERS

"ENGINEERED TRANSPORTATION"

World's Largest Builder of Truck-Trailers

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COMPANY _____

ADDRESS _____

CITY _____ STATE _____

* Fill in or just attach to letterhead and mail.

**The Efficiency of Your
Fruehauf Fleet Is Part of
Your Roadbuilding Profit!**

OCTOBER, 1957

For more facts, use coupon, or Request Card at page 18 and circle No. 332

"Went through
2 feet of frost
with all three
teeth down on
OMSTEEL No. 28
tow-type ripper"



That's the report we got from F. W. Forst of the F. W. Forst Construction Company, Omaha, Nebraska, on a land clearing job last winter for a levee near Sioux Falls, So. Dak. Forst used a Caterpillar D9 Tractor. No ballast was used.

OMSTEEL tow-type rippers are more versatile because when not in use your tractor is available for other drawbar work. Both the No. 28 and the smaller No. 18 rippers are made to Caterpillar Tractor Co. specifications and design. The No. 28 weighs 13,430 pounds, and the No. 18 is 9,775 pounds. Ballast can be added to both models.

OMSTEEL tow-type rippers are sold all over the world through Caterpillar dealers.



OMAHA STEEL WORKS

609 So. 49th St. Omaha, Nebraska

A licensed manufacturer for Caterpillar Tractor Co.

For more facts, use Request Card at page 18 and circle No. 333

**UNIT
MODEL 510**

**THE NEW UNIT
Challenger
... with CLAMSHELL**



It's BEST to INVEST in UNIT...

because UNIT's advanced design gives you Self-Aligning, Replaceable Hook Shoes... Straight-in-line Engine Mounting with Torque Converter... Hydraulic Actuated Clutches... Modern Transmission with Involute Splines... One Piece Cast Gear Case... Alloy Steels and Forgings... Force Feed Lubrication and many other UNIT advantages. These life-prolonging features are contributing substantially to the performance and efficiency of each machine. And they explain why UNIT equipment is so universally acceptable.

See the many other new features illustrated and described in UNIT CHALLENGER Bulletin C-800. Write for your copy of this bulletin.



UNIT CRANE & SHOVEL CORP.
6309 W. Burnham St. • Milwaukee 14, Wis., U.S.A.

Geared to boost your earnings!



For more facts, use Request Card at page 18 and circle No. 334

Product Para 3



A multi-pass continuous heat flue system is one of the many features of this Littleford Spray Master bituminous distributor. The unit is said to provide complete coverage in the application of all types of asphalt, tar, emulsion, road oils, and cutback. All controls are located within easy reach of the operator, with the full-length catwalk and roomy rear platform contributing to safety and ease of operation. For further information write to Littleford Bros., Inc., Dept. C&E, 453 E. Pearl St., Cincinnati 2, Ohio, or use the Request Card at page 18. Circle No. 40.

New engine features protection from weather

Its Model K660G engine is announced by the Kohler Co.

Featuring a weatherproof steel housing, the engine is designed especially for applications where protection from the weather is important.

A 4-cycle air-cooled unit, the engine has two opposed cylinders and develops 24 horsepower at 3,200 rpm.

Blower and housing are designed with baffles directing a large volume of cooling air around the finned cylinder and head area, assuring correct temperatures under all operating conditions.

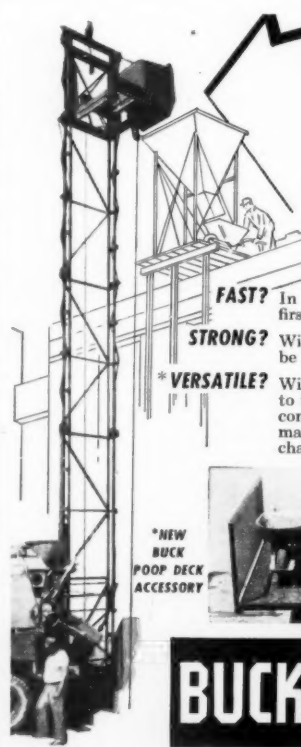
The engine is equipped with a heavy-duty, rainproof, silencer-type muffler and gear-type lubrication.

The model K660G comes furnished with a 5½-gallon fuel tank; weight of engine and tank is 280 pounds. The same engine is also available



without a fuel tank as Model K660H at 260 pounds weight for direct mounted applications.

For further information write to the Kohler Co., Dept. C&E, Kohler, Wis., or use the Request Card at page 18. Circle No. 172.



BUCK puts Concrete

where YOU need it...

when YOU need it

Avoid costly down-time. The Portable Buck Hoisttower equipped with the ¾ cu. yd. clean-dumping concrete bucket actually moves 97 yards of concrete... and more... in three hours.

FAST? In 23 minutes—from towing to working—your first load of concrete is up.

STRONG? With the new 25 hp. engine a 2500 lb. load can be hoisted 100 ft.—and then some!

***VERSATILE?** With the new Buck Poop Deck accessory—built to fit any old or new model Buck Hoisttower—contractors can hoist loads of masonry and other materials in between concrete loads without changing the platform.

*NEW
BUCK
POOP DECK
ACCESSORY



Whether it be the platform, concrete bucket, Buck Poop Deck or Chicago Boom, depend on Buck.

For free literature—and to action test this machine—see any of the 73 Buck dealers or write direct.

**BUCK EQUIPMENT
CORPORATION**

720-D ANDERSON FERRY ROAD,
CINCINNATI 38, OHIO

In Canada: London Concrete Machinery Company
London, Ontario
In England: Millers Machinery Co., Ltd.
London, E.C. 2.

For more facts, use Request Card at page 18 and circle No. 335

CONTRACTORS AND ENGINEERS



This Press triple-tapered dump body, wider and higher at the front than at the rear, and longer at the bottom than on the top, is designed primarily for hauling sand and gravel.

Dump body takes greater load on the front end

Its new triple-tapered dump body is announced by Jacob Press' Sons, Inc.

This new body is wider and higher at the front than at the rear, and is longer at the bottom than at the top. It is designed primarily for hauling sand and gravel.

The new design allows for greater load on the front end to take advantage of strict weight laws in various states.

The tailgate control is operated manually from within the cab. A 20-ton twin-telescopic hoist is used to raise and lower the body.

Sides, front, rear, and floor are constructed of lightweight, high-tensile SAE No. 950 steel.

The steel floor is flanged up on the sides and reinforced with inverted V-braces in three rows on the under side. Top sides of sections are formed to channel section and reinforced with inverted pressed steel channel. The front wall is reinforced with three or more pressed-in V's, top formed to open box section.

For further information write to Jacob Press' Sons, Inc., Dept. C&E, 501 W. 33rd St., Chicago, Ill., or use the Request Card at page 18. Circle No. 25.

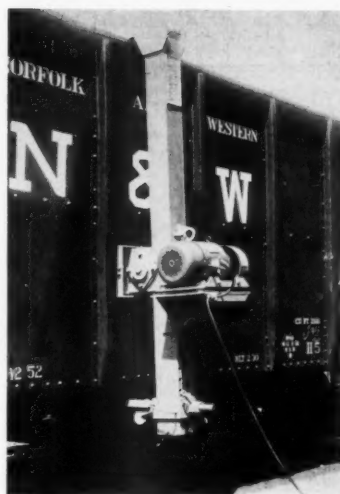
Christmas gift problem solved with citrus fruit

Recommended as an ideal gift for customers, friends, and business associates, citrus fruit from Florida is offered by the Braun Fruit Packers.

Oranges, tangerines, and grapefruit are available by the half bushel, full bushel, half box, and full box—approximately 30, 55, 45, and 90 pounds respectively. Many of the packages are attractively garnished with jelly, honey, marmalade, and candy. The fruit may be ordered in packages of one variety or assorted, as may be preferred.

Easy, early Christmas shopping is the advantage stressed here: gift packages ordered now will be shipped so as to arrive just before Christmas.

For a colorful folder listing the various arrangements and their prices, write to the Braun Fruit Packers, Dept. C, Deland, Fla., or use the Request Card at page 18. Circle No. 179.



THE NATIONAL CAR SHAKER

NATIONAL CONVEYOR & SUPPLY CO.

For more facts, use Request Card at page 18 and circle No. 336

UNLOAD
✓ quickly
✓ safely
and with just
ONE MAN

Unload sand, stone and other aggregates just as fast as your conveyors can work. No bottleneck at unloading point.

Write today!

359 N. Harding Ave.
Chicago 24, Illinois

More work capacity, with less investment



DIGGER - SHOVEL - CRANE

Heaviest-Duty, largest GPM Hydraulic System Available!



NEW

GREATER REACH,
LOADING HEIGHT,
DIGGING DEPTH
EXTRA HEAVY-DUTY
72 GPM TRIPLE TANDEM
PUMP AND SPLIT
VALVE BANK



13½' DIGGING DEPTH



11½' LOADING CLEARANCE



COMPACT, MOBILE

Take any 2-ton or larger truck (even one you've already written off) mount this HOPTO, and you've got a mobile, fast-cycling, completely hydraulic digger, shovel or crane for less cost than you ever thought possible!

Your HOPTO 200 DTM 57-72 features a 72 gallon per minute triple tandem pump that feeds a split valve bank. This split hydraulic system means more efficient, faster and cooler operation. The redesigned dipper stick lets you dig to 13½ feet, gives you a ground reach of 19 feet and a backhoe loading height of 11½ feet. This new HOPTO handles a 30" backhoe through 200° continuous swing... has four easily mastered control levers for fatigue-free... more profitable operation!

RUGGEDLY BUILT—2-WAY VERSATILITY!

Big 5" ID cylinders on hoist, crowd, and bucket control hydraulic outriggers, individually controlled from operator's seat, and husky over-all construction add to the HOPTO's long, money-making life! The same boom and dipper stick mount a backhoe or shovel bucket... you switch from backhoe to shovel in minutes. You get more out of the HOPTO because it's built to do more jobs... better, at lower cost!

TRAILER MODELS

The new HOPTO is also available in either self-powered or PTO-operated trailer models. Check with your dealer for the model that best meets your needs.

HALF-YARD HOPTO 360

New Model 360-57-90 HOPTO offers 360° continuous swing, 90 GPM triple tandem pump and split valve bank... heaviest duty available! Handles ½ yard backhoe easily. Thirty-second set-up time!



Write Today
For Complete Information

BADGER MACHINE CO.
WINONA, MINNESOTA Dept. E

For more facts, use Request Card at page 18 and circle No. 337



When cold weather strikes, Garmer & Stiles, Des Moines general contractors, uses Olin polyethylene film tarpaulins to close in buildings, as shown on this job for Friedman Motors, Des Moines. According to Carl Mitchell, superintendent on the job, without the use of any heat the polyethylene tarps kept the temperature 20 degrees warmer inside. Another advantage cited by the firm is that with these tarps no artificial lighting is required. For further information about these polyethylene tarpaulins, write to the **Olin Mathieson Chemical Corp.**, Dept. C&E, 460 Park Ave., New York 22, N. Y., or use the Request Card at page 18. Circle No. 175.

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ask for

INSTO-HOT®

**SALAMANDERS
BLOWER HEATERS
INFRA-RED HEATERS**

**3 TYPES
9 MODELS**

To Choose From



The all new No. 1700

**BLOWER
HEATER**

Weights only 30 lbs.

**PORTABLE LP-GAS HEATERS
FOR EVERY PURPOSE**

GET CLEAN, INSTANT, LOW COST HEAT — ANYTIME, ANYWHERE — INDOORS, OUTDOORS — FROM INSTO-HOT HEATERS. ENGINEERED AND MANUFACTURED BY INSTO-GAS CORPORATION — LEADER IN PORTABLE HEAT SINCE 1933.

Write TODAY for complete information:

INSTO-GAS CORPORATION • DETROIT 7, MICHIGAN

INSTO-GAS CORPORATION, Detroit 7, Michigan Dept. C&E

Send facts on Insto-Hot Salamanders, Blower Heaters, Infra-Red Heaters.

NAME _____

ADDRESS _____

For more facts, use coupon or circle No. 338



**Spare the Chisel
- Save the Parts
USE
KROIL**

Don't ruin a valuable piece of equipment merely because some part is rusted tight. Apply Kroil, the amazing new chemical lubricant that creeps into millionth inch spaces (proved by laboratory tests), dissolves rust, supplies necessary lubrication and

LOOSENS FROZEN PARTS

18,000 of America's leading plants can't be wrong! They have used KROIL for 10 years and are still depending on it to save expensive labor and valuable parts. They say: "Kroil loosened bushings after a 12-ton press had failed" . . . "on repairing heat treat trolleys formerly destroyed every nut. Now Kroil saves them all, and time, too" . . .

You too should be using KROIL every day. Try it on money-back basis. Gallon \$4.00; with Kroil trigger squirt gun (shoots a drop or a stream 15 feet, if desired) \$4.95, f. o. b. our factory.

KANO LABORATORIES 1057 Thompson Lane, Nashville 11, Tenn.

KANO LABORATORIES

For more facts, circle No. 339



**PLASTER AND
MORTAR MIXERS**
5 sizes 2 to 12 Cu. Ft.
Electric or gasoline.
Power throw-out on
smaller models, disc
clutch on larger.



**3 1/2 Cu. Ft.
NON-TILTING
CONCRETE MIXER**
Drum 35" dia. x 27"
wide B & S Air-cooled
engine 4.5 Hp. at
2700 RPM



**4 BLADED
POWER TROWELS**
24" 29" 34" 48" dia.
B & S Air-cooled en-
gines. Clutch and
speed controls on
handle.

**CONCRETE MIXERS
TILTING TYPE**
3, 3 1/2, and 6 Cu. Ft.
(mixed concrete).
Electric or gasoline.
Timken Bearings.



**cost less
last longer
and produce more**

Low-price, low maintenance cost and high output are combined in Muller Machines. Three major factors contribute to these qualities—seasoned experience (fifty years), specialization, and careful selection of materials and parts

Ask for prices and name of local dealer.

MULLER MACHINERY COMPANY, INC.
Meluchan N. J. Cable Address: MULMIX

For more facts, circle No. 340

**New adding machine
speeds payroll work**

Its new Model 111V21 Duplex 10-key adding machine in the V series is announced by the Monroe Calculating Machine Co., Inc.

According to the manufacturer, two registers enable the Duplex to do the work of two machines. These storage mechanisms permit the operator to add or subtract in either register for such jobs as debits and credits, sales and returns; or in both registers simultaneously, as in payroll, where individual pay is required along with total payroll. One register can be used for group totals, while the other automatically accumulates to a grand total. On all operations the symbolization printed on the tape to identify the register action has been greatly simplified.

The Duplex, listing 11 and totaling 12, is compact, quiet, and easy to learn. Interlocks prevent key-piling and permit high speed without error.

For further information write to the Monroe Calculating Machine Co., Inc., Dept. C&E, 555 Mitchell St., Orange, N. J., or use the Request Card at page 18. Circle No. 130.

**Redesigned heater-planer
eliminates fire hazard**

Its completely redesigned heater-planer for one-pass reconditioning of asphalt streets, highways, and airport runways is available from the Monatco Mfg. Corp.

The new Monatco Model M-2 places main drive engine, primary transmission, and steering over the front axle, away from the heat zone. Operator, fuel tanks, secondary transmission, and final drive are well to the rear of the heat zone. All parts in the heat zone subject to heat damage are water-cooled. Two automatic fuel cut-offs provide final assurance against fire.

The unit's open frame design reportedly gives maximum visibility and accessibility to all major components of the machine. The heating hood and blades are clearly visible from the operator's position.

The Model M-2 features standard automotive parts throughout, in clutch, transmission, full-time power

CONTRACTORS AND ENGINEERS

steering, and air brakes. Powered by a Continental 90-gross-bhp engine, the machine has 15 forward speeds ranging from 8 fpm to 25 mph, and 3 reverse speeds. Its turning radius has been shortened to 21 feet.

This machine heats, softens, planes and conditions asphalt in one operation, leaving the surface raw, smooth and clean, conditioned for seal coating and/or resurfacing.

For further information write to the Monatco Mfg. Corp., Dept. C&E, 1401 Woodland, Kansas City, Mo., or use the Request Card at page 18. Circle No. 9.

The Monatco Model M-2 heater-planer features an improved design said to eliminate fire hazard in asphalt reconditioning. Major components of the machine, and the operator, have been moved well to the rear of the heat zone. All parts in the heat zone subject to heat damage are water-cooled.



Wax for snowplows has many advantages

Its Penn Drake snowplow wax is offered by the Pennsylvania Refining Co. With moldboards and wings treated with this product, plows move more snow faster, more easily and economically, according to the company.

Advantages of the wax include the prevention of piling and the elimination of breakdowns from overloading. It is also said to prevent rust. Easily applied with brush or spray gun, it dries to a slick, hard surface in 15 minutes, the manufacturer reports.

For further information write to the Pennsylvania Co., Dept. C&E, 2686 Lisbon Road, Cleveland 4, Ohio, or use the Request Card at page 18. Circle No. 33.

Offer engine pre-heater for trucks, tractors

A 500-w tank-type engine heater for use in pre-heating truck and tractor engines is available from the Phillips Mfg. Co.

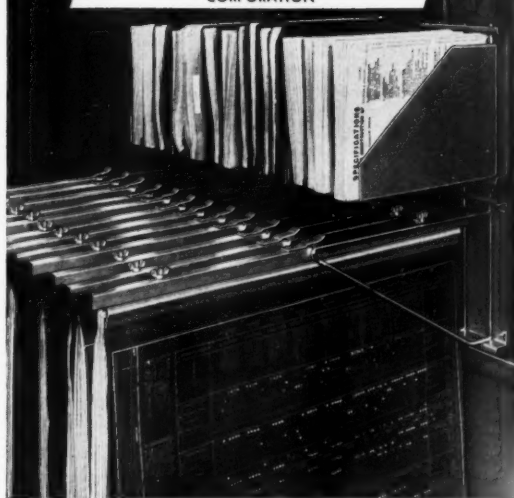
According to the manufacturer, by heating and circulating engine coolant within 20 seconds, the tank unit permits rapid heat inside the cab of a vehicle, as well as insuring easy starting, less engine wear, and reduced gasoline consumption.



The unit is connected to the engine's block drain and operates on 115-volt ac or dc power.

For further information write to the Phillips Mfg. Co., Dept. KP, Dept. C&E, 2816 Aldrich Ave. S., Minneapolis 8, Minn., or use the Request Card at page 18. Circle No. 102.

TRADE MARK
PLAN HOLD
CORPORATION



A New Concept in Vertical Filing

SOLD BY LEADING BLUE PRINTERS,
ENGINEERING AND OFFICE SUPPLY DEALERS

for complete line, send for Catalog No. 6K

PLAN HOLD • SOUTH GATE, CALIFORNIA

For more facts, circle No. 341

SAVE THOUSANDS! UNUSED 6x6 ARMY TRUCKS

***2 1/2-TON, GMC &
INTERNATIONAL**



- From Government Storage
- Factory-New Condition
- Unused and Guaranteed!
- Reconditioned trucks also available!

Why invest in expensive new trucks and equipment needed to get the roughest off-road jobs done when you can save up to \$3,000 on ONE truck alone—and get the job done right!

Compare our tandem axle trucks with front wheel drive, 10 forward speeds, overdrive and new mud and snow tires with similar equipment elsewhere. See for yourself how TWO of our trucks cost you even LESS than one new truck!

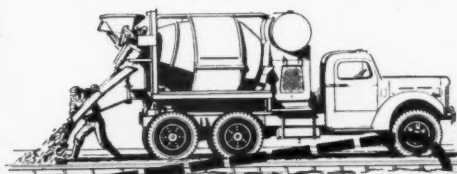
If planning to buy a truck, get in touch with us right away. There's no obligation . . . and we deliver on approval!

For Specifications, Prices, Delivery
Write, wire or phone COLLECT—JACKSON 5-7841
Milton Y. Toombs, Jr.,
Sales Manager

MEMPHIS EQUIPMENT CO.
Construction and automotive equipment and parts
766 S. THIRD ST. • MEMPHIS, TENN.

For more facts, circle No. 342

No time lost when concrete is



**SPECIAL
WINTERIZED**

with SOLVAY CALCIUM CHLORIDE

You save four ways when you order ready-mix that is "special winterized," including SOLVAY Calcium Chloride:

1. You save overtime finishing, because it sets faster.
2. You save delays in form removal, because it develops high early strength.
3. You save delays between operations.
4. You can save up to 50% on protection time.

For the low cost of adding 2% of SOLVAY Calcium Chloride to concrete, you can actually maintain warm weather working schedules in winter. And you get better concrete! Ultimate strength at one to three years is actually 8 to 12% greater. Your product is more workable. With lower water-cement ratio, you get denser, more moisture-and-wear-resistant concrete.



Solvay Calcium Chloride speeds but does not change the normal chemical action of portland cement. Impartial tests by the National Bureau of Standards prove its advantages in cold weather construction and concrete work. It is recommended or approved by leading authorities, including American Concrete Institute and Portland Cement Association.

Write now for full data!

SOLVAY PROCESS DIVISION
ALLIED CHEMICAL & DYE CORPORATION
61 Broadway, New York 6, N. Y.

BRANCH SALES OFFICES:
Boston • Charlotte • Chicago • Cincinnati • Cleveland • Detroit • Houston
New Orleans • New York • Philadelphia • Pittsburgh • St. Louis • Syracuse

For more facts, circle No. 343



This fully hydraulic, one-man operated truck crane requires only 15 inches of space between the cab and truck bed. Designated the Hiab 170, it offers a range of lifting capacities from 6,000 pounds on the shortened boom of 5 feet, to 2,500 pounds on the full boom of 13 feet. The boom length is easily adjustable through hydraulic control. The crane will lift up to 20 feet above ground level at a maximum speed of 20 inches per second. Control is from either side of the truck cab. For further information write to **Stanco Mfrs. & Sales, Inc.**, Dept. C&E, 1931 Pontius Ave., Los Angeles 25, Calif., or use the Request Card at page 18. Circle No. 31.

Sure-Seal® FINAL DRIVE SEALS

DOUBLE PROTECTION

For
Caterpillar
D-9 Tractors



Final drive on Caterpillar D-9 tractors are double-protected against damage from loss of lubricant with new Sure-Seals. Even if the outer bellows seal is broken, the oil can't leak out due to the exclusive "O" ring (1) inner seal—dirt, water, foreign matter can't get in.

Other Sure-Seal features: Equal pressure springs (2) are self-aligning and exert proper pressure for effective seal without undue friction. Flexible, oil-resistant bellows (3) is ribbed for extra wear resistance and strength. Rubber grommets (4) on locating pins hold seal in place while installing.

Sure-Seal Final Drive Seals also made for D-4, D-6, D-7 and D-8 tractors.

Sure-Seal® ROLLER SEALS

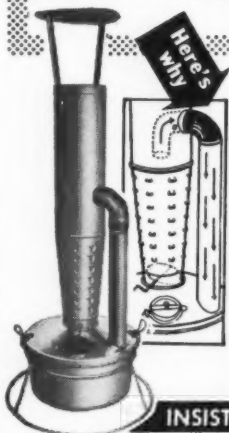
Has Chevron inner seal (1) to give double protection to rollers on Caterpillar and International Harvester tractors. High pressure lubrication can't blow out bellows seal. Keeps lubricant in—dirt and water out. Also has heat-resistant leather facing (2), self-aligning, equal-pressure springs (3), flexible oil-resistant bellows (4).



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Sure-Seal Equipment Co.
1820 N.W. 25th Ave. Portland 10, Oregon

For more facts, circle No. 344

The most widely used Salamander for construction!



WHY HY-LO LEADS: Patented Return Gas Principle ends SMOKE... eliminates SOOT!

- Low first cost low operating cost.
- 70,000 to 140,000 BTU per hour!
- Burns only 1/2 to 1 gallon per hour of low cost fuel oil.
- One filling lasts 10 to 20 hours.
- Requires no skilled attendant.
- Lights with a match...easy to operate.
- Exclusive damper for quick extinguishing.
- Carrying handles for easy moving.

AVAILABLE IN ALL PRINCIPAL CITIES

INSIST on HY-LO Salamanders!

HY-LO's patented Return Gas Principle guarantees you a smokeless, clean-burning Salamander, requiring minimum care and attention. Nationally accepted, HY-LO's superior performance is the reason it is most widely used in the construction industry! HY-LO gives more clean heat per dollar invested than any other Salamander!



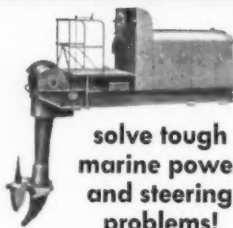
PRODUCTS CO.

279 Stowell Street, Upland, California

NOTICE: Owner of exclusive right to manufacture and sell Outside RETURN Gas Stacks Salamanders under U.S. Letters Patent No. 2,284,157.

For more facts, circle No. 345

HARBORMASTERS



solve tough
marine power
and steering
problems!

Harbormasters are complete, heavy duty marine power packages, quickly and easily installed for immediate use. They are efficient, economical to operate and maintain... and they give you many special features not found with ordinary marine power. They are ideal for shallow or deep water, for coastwise service, as well as in harbors, lakes, canals, and rivers.

In hundreds of installations Harbormasters are moving bigger payloads at less cost, in less time. Send for catalog and get complete details.

MURRAY & TREGURTHA, INC.

44 Hancock Street, Quincy 71, Massachusetts

For more facts, circle No. 346



Steer in any direction with full power



Rugged, powerful, easily installed



Shallow water protection



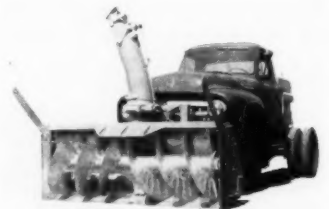
Economical operation and maintenance

New rotary snowplow for 4-wheel-drive trucks

A new rotary snowplow for 4-wheel-drive trucks is announced by Bros, Inc.

Designated the Model B Sno-Flyer, this plow is said to be suitable for any 4-wheel-drive truck in the 17,000 gvw range. It is front-mounted by a universal hitch that permits interchange with push plows.

According to the manufacturer, the unit has a capacity for handling 20 tons of snow per minute, casting dis-



tances up to 75 feet. Hard, wet, or chunky snow conditions reportedly do not hamper casting performance. Its loading chute permits rapid loading to trucks in crowded streets.

A casting chute rotates 360 degrees to control placement of snow in adjacent areas. A capper on the chute controls the height of the snow stream being ejected.

The plow has an 8-foot cutting width, and is powered by an 8-cylinder industrial engine mounted on the rear of the truck chassis. Casting chute rotation and raising or lowering of the plow are both controlled hydraulically from inside the truck cab.

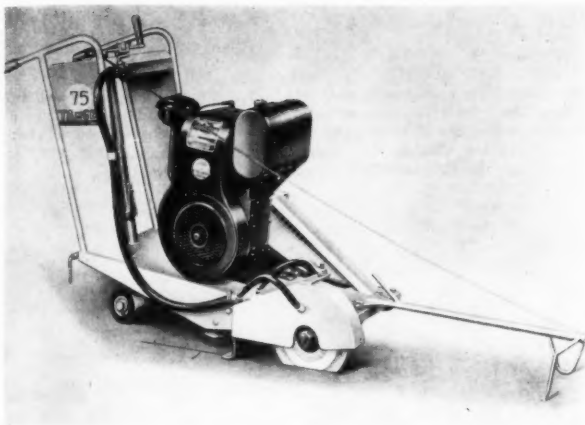
For further information write to Bros, Inc., Road Machinery Division, Dept. C&E, 1057 Tenth Ave. S.E., Minneapolis 14, Minn., or use the Request Card at page 18. Circle No. 124.

Two new concrete saws are lightweight, compact

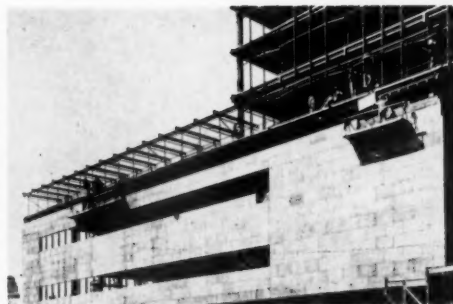
Two new lightweight Target concrete saws are announced by the Robert G. Evans Co.

The Model 75, equipped with a 7 1/2-hp Wisconsin air-cooled engine, is said to be light enough to lower easily into a basement, compact enough to go through doorways, and to maneu-

CONTRACTORS AND ENGINEERS



A monorail system provides lateral movement for Junior swing-ing scaffolds to speed the application of precast panels on the new National Bank of Commerce, San Antonio, Texas. An electric winch, between the scaffold trolley mechanisms, also rides the monorail and is used for hoisting and positioning the precast units. For more information about Monorail systems, write to The Patent Scaffolding Co., Inc., Dept. C&E, 38-21 Twelfth St., Long Island City 1, N. Y., or use the Request Card at page 18. Circle No. 64.



ver easily around machinery, light poles, manholes, and other similar obstructions.

The 18-hp Model 180 is also said to be light and swiftly maneuverable, yet to possess the power and rugged design to handle large construction projects.

Both models are equipped with the Target lock-type screw feed designed to provide fast, accurate lowering and raising of the blade, and prevent back-off of the blade in heavy sawing. Four solid, non-castering wheels hold the blade square on the cutting line on sidehill sawing or when operating over rough, uneven surfaces.

For further information write to the Robert G. Evans Co., Dept. C&E, 6024 Troost Ave., Kansas City 10, Mo., or use the Request Card at page 18. Circle No. 94.

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.



Plan To Produce Your Own Aggregate?

Consult EAGLE About Washing-Classifying Equipment!

Eagle pioneered concrete aggregate washing - classifying - dehydrating equipment. Eagle engineers have vast experience. Eagle has more installations than all other makes combined. Eagle has the broadest line. Nationwide factory trained sales-service organization.

OUR 85th ANNIVERSARY



For more facts, circle No. 347

OCTOBER, 1957

GALION MODEL 118 MOTOR GRADER



The Best Value in a Heavy-Duty CONSTANT-MESH GEAR TRANSMISSION GRADER

TIME-PROVED STANDARD FEATURES

- 115 hp International diesel engine (125 hp G.M. diesel available).
- Weight with scarifier 24,910 lbs.
- Power and weight balanced to provide utmost "push-power" at the blade.
- Extra-large single plate MOR-LIFE clutch with "Cermetalllic" disc facing.
- Six overlapping forward speeds (1.3 to 22.6 mph). Two reverse speeds (8.5 mph high reverse).
- Hand steering with hydraulic booster.
- Full hydraulic operation by finger-tip hydraulic control system—Galion designed and built—safe, dependable, efficient.
- Extra-large positive-traction tires—same size front and rear.
- Heavy front axle assembly.
- Full visibility of work being done.
- Full-floating axles.

THE GALION IRON WORKS & MFG. COMPANY
General and Export Offices—GALION, OHIO, U. S. A.



Write for literature on Model 118 Motor Grader and the Galion complete line.

A COMPLETE LINE OF MOTOR GRADERS

GRADE-O-MATIC Models

Model T-700, 190 hp, 40,125 lbs.
Model T-600, 140 hp, 30,420 lbs.
Model T-500, 125 hp, 25,765 lbs.

Gear-Shift Models

Model 118, 115 hp, 24,910 lbs.
Model 104, 100 hp, 23,635 lbs.
Model 450, 75 hp, 22,415 lbs.
Model 303, 60 hp, 16,165 lbs.
Model 503, 50 hp, 9,360 lbs.

All weights with scarifier.



For more facts, use Request Card at page 18 and circle No. 348



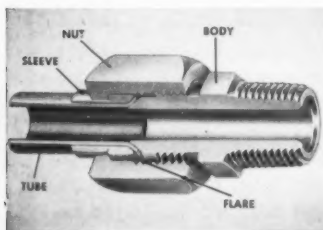
Warmth and weather protection from snow, rain, and freezing temperatures is provided by polyethylene film tarpaulins. The film is waterproof and tear-resistant and will not run if punctured. It remains completely flexible in temperatures down to 70 degrees below zero. For further information write to the **Visking Co.**, Plastics Division, Dept. C&E, P. O. Box 1410, Terre Haute, Ind., or use the Request Card at page 18. Circle No. 138.



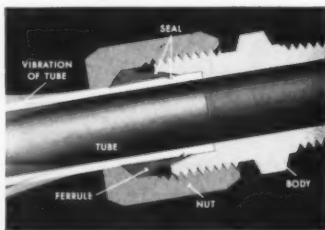
New Parker No-Skive Hoze-lok FASTER... EASIER... RE-USABLE

No more frustrating jobs of stripping covers from hydraulic wire-braid, rubber-covered hose! No more ragged hose ends refusing to enter sockets! **New Parker Hoze-lok Fittings** save you all this time and trouble. Skiving of hose covers is *not* necessary. Simply screw the nipple in to complete the make-up. What could be easier

... or more effective? **Versatile Hoze-lok Fittings** are reusable... an important benefit to users of your equipment. Select your Hoze-lok Fittings now from the new, wide range of styles and sizes, with four different connecting ends and full range of adapters. Send for Catalogs 4433, 4434.



Triple-lok Flare Fittings... the easiest, fastest, safest way to tube up even in close quarters. Leakproof even under severe vibration, high pressures. Meet S.A.E. Standard. Catalog No. 4310.



Ferulok Flareless Fittings for high-pressure heavy-wall tubing. Double seal makes Ferulok leakproof, vibration-proof. You can see the "bite." Meet S.A.E. Flareless Standard. Catalog No. 4320.

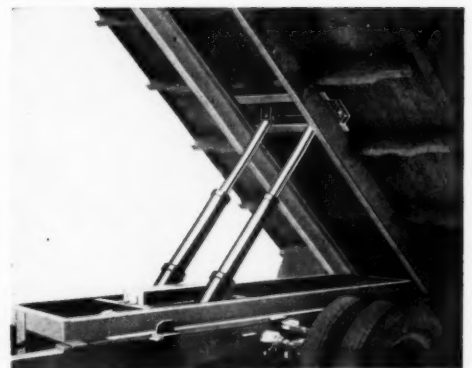
**TUBE AND HOSE
FITTINGS DIVISION**
Section 431-1
The Parker Appliance Co.
17325 Euclid Avenue
Cleveland 12, Ohio

Parker
Hydraulic and fluid
system components

For more facts, use Request Card at page 18 and circle No. 349

New underbody telescopic conversion hoist

Designed for use on 1½ to 2-ton units, the new Galion hoist has a rated capacity of 11 tons.



A new underbody telescopic conversion hoist, designed especially for use under platform and rack bodies, is announced by **Galion Allsteel Body Co.**

Designated Model 44245, the new hoist is said to effect important hoist weight savings and to minimize truck frame distortion during dumping, due to its forward mounting on the chassis.

Intended for use under bodies up to 14 feet in length on 1½ to 2-ton 84-inch CA chassis, the hoist has a rated capacity of up to 11 tons and a dump angle of 45 degrees. Twin 4-inch 2-stage telescopic cylinders with leak-free chevron packing and built-in dirt wiping rings are said to afford maximum trouble-free service life. A high-speed gear-type pump, positive-acting control valve, and

Need HOSE in a HURRY?

**Suction • Water • Steam
Air • Multi-Purpose
Discharge • Pile Driver**

Wherever your job is—whenever you need hose—there's a **Continental Warehouse** nearby stocked to give you any kind of hose you want—when and where you want it.

There's no need to wait for distant shipments—no need to stop the job—no need to lose profits.

Any time you need hose call **Continental**. You'll like the fast service and dependable quality you get from these warehouses:

ATLANTA 8, Ga. 477 Eighth St., N.E.	INDIANAPOLIS 4, Ind. 309 North Capitol Ave.
BALTIMORE 18, Md. 15 East 21st St.	LOS ANGELES 23, Calif. 3121 East 12th St.
BOSTON (Alls. 34), Mass. 12 Franklin St.	MEMPHIS 3, Tenn. 268 Madison Ave.
CHICAGO 10, Ill. 10 West Hubbard St.	NEW YORK 7, N. Y. 81 Murray St.
CINCINNATI 2, Ohio 49 Central Ave.	PHILADELPHIA 6, Pa. 311 North Randolph St.
CLEVELAND 15, Ohio 2731 Prospect Ave.	SAN FRANCISCO 24, Calif. 1352 Egbert Ave.
DETROIT 27, Mich. 13801 Schoolcraft Ave.	ST. LOUIS 8, Mo. 4018 Olive St.
	SYRACUSE 3, N. Y. 739 Montgomery St.



CONTINENTAL STEAM HOSE

Built for work up to 100 p.s.i., this hose is tailor made with special heat-resistant rubber tube, plies of quality frictioned duck with heavy rubber separation and tough rubber cover. Sizes: ½", ¾", 1", 1¼", 1½", 2". Ask for catalog showing complete line of **CONTRACTORS HOSE, HOSE FITTINGS, BOOTS and CLOTHING.**

HOSE by CR
CONTINENTAL

CONTINENTAL RUBBER WORKS • 1929 LIBERTY ST. • ERIE 6 • PENNSYLVANIA

For more facts, use Request Card at page 18 and circle No. 350

CONTRACTORS AND ENGINEERS

built-in reservoir are included with the hoist.

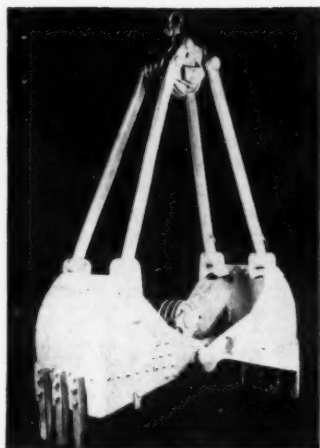
The hoist subframe is 1/4-inch formed alloy steel. Channel longitudinals for bodies with steel cross-members, or Z-type for bodies with wooden longitudinals, are optional. A choice of dash or floor-mounted controls is offered.

For further information write to Gallion Allsteel Body Co., Dept. C&E, Gallion, Ohio, or use the Request Card at page 18. Circle No. 16.

New line of fast-release, rugged clamshell buckets

A new line of fast-release, easy-operating clamshell buckets is announced by the Hutton Fabricating Mfg. Corp.

Designated the Hutton Pelican line, these buckets feature calculated inside and outside arm lengths, which together with the proper distribution of weight and a special pulley



design result in a unit that opens and closes with extreme speed and has exceptional digging efficiency, according to the manufacturer.

The cutting teeth and cutting lip are forged of the new T-1 steel, said to combine a yield strength of 90,000 psi or more with the toughness necessary to withstand unusual impact and abrasion abuse.

The shells and head are of all-welded construction.

Hutton buckets feature block-and-tackle-type reeving which keeps cables and pulleys out of contact with the material, resulting in longer cable and pulley life.

For further information write to the Hutton Fabricating Mfg. Corp., Dept. C&E, 2736 E. 79th St., Cleveland 4, Ohio, or use the Request Card at page 18. Circle No. 22.

Snow-removal attachments feature ease of adaptation

Snow-removal attachments for use with its tractor units are available from the Minneapolis-Moline Co.

With the simple removal of four hitch pins, several attachments can be added or changed. These include a snowplow, snow sweeper, snow loader, rotary blower, and icebreaker.

For further information write to the Minneapolis-Moline Co., Dept. C&E, Hopkins, Minn., or use the Request Card at page 18. Circle No. 54.

Useful for winter ripping, Ateco heavy-duty rock rippers mount on the rear of the tractor with a drawbar arrangement that eliminates strain on the transmission case. Installation of this ripper leaves track frames and front-end clear for bulldozer mounting. The rippers are available for all popular makes of large crawler tractors. For further information write to the American Tractor Equipment Corp., Dept. C&E, 9131 San Leandro Blvd., Oakland 3, Calif., or use the Request Card at page 18. Circle No. 141.



MODERN HEAVY-DUTY DIESEL ENGINES for CONTRACTORS' EQUIPMENT

and marine applications



air-cooled diesels
3-120 h.p.

water-cooled diesels
6-200 h.p.

generating sets
AC and DC
1 1/2 to 120 KW

instant starting . . . reliable . . . economical

WORLD-WIDE SERVICE supporting more than 1,000,000 engine sales

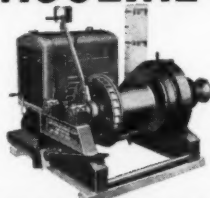
IMMEDIATE DELIVERY on smaller engines and generating sets

PETTER DIESEL ENGINES
DIV. OF BRUSH ABOE, INC.

60-07 39th AVE., WOODSIDE, N. Y. DEFender 5-7100

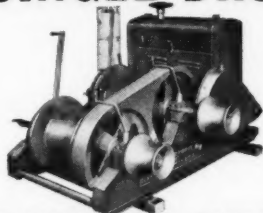
For more facts, circle No. 351

GASOLINE HOISTS



The economical hoist for the economical job.
Duty: 1000 lbs. to 5000 lbs. at 150-175 FPM.
Model—No. 140
Single Drum—

SINGLE DRUM HOIST



No. 240 Double Drum—Meeting your hoisting needs and backed by a combined 200 years of experience in building hoists.

DOUBLE DRUM HOIST

Write for Bulletins and Catalogs

SUPERIOR-LIDGERWOOD-MUNDY CORPORATION

Main Office and Works: SUPERIOR, WISCONSIN, U.S.A.
New York Office, 7 Dey Street, New York 7, N. Y.

For more facts, circle No. 352

MC PROFIT MAKERS

TRANSCRETES

Truck Engine Drive and Separate Engine Models



Real money making, cost saving features including SWING-OUT HOPPER, trouble-free FLOATING DRIVE. Sizes to fit every need—4 to 7 yards mixing capacities.

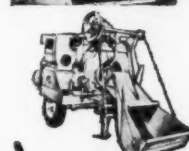
CENTRAL PLANT MIXERS

Designed to speed up production on big jobs and in commercial ready mix plants. Three sizes . . . 1, 2 and 3 yard capacities.



BUILDING MIXERS

Rugged, compact—easy to spot, easy to move. Make you more money on every job. From 3 1/2 to 165 sizes.



PLASTER and MORTAR MIXERS

These efficient, top quality machines have "TRIPLE-HOE" mixing action for better quality and quicker mixes. 4 to 12 cu. ft. sizes.



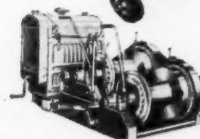
DUAL PRIME PUMPS

Automatic priming, self cleaning. Capacities from 4000 to 240,000 g.p.h. Wheel or skid mounted. Gasoline, diesel or electric. ALSO DIAPHRAGMS AND OTHER TYPES.



HOISTS

Tops in design, construction, efficiency. Many sizes. A complete selection in single and multiple drum models from 8 to 45 H.P.



FREE LITERATURE

Gentlemen: Rush me your latest literature on CMC products I have checked below.

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| <input type="checkbox"/> TRANSCRETE MIXERS | <input type="checkbox"/> PLASTER & MORTAR MIXERS |
| <input type="checkbox"/> CENTRAL PLANT MIXERS | <input type="checkbox"/> DUAL PRIME PUMPS |
| <input type="checkbox"/> BUILDING MIXERS | <input type="checkbox"/> HOISTS |

NAME

ADDRESS

CITY

STATE

CONSTRUCTION MACHINERY CO., Waterloo, Ia.

For more facts, use coupon or circle No. 353

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the Request Card at page 18.

Product Parade

No Matter What
SIZE...



No Matter What
SHAPE...

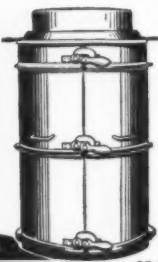


QUINN CONCRETE PIPE FORMS

Set The **STANDARD** For Producing Quality Pipe!

Over 50 years of experience go into the production of every Quinn Concrete Pipe Form. That's why the Quinn Heavy Duty form is recognized as the STANDARD the world over for producing quality concrete pipe at the lowest cost. Used in making pipe by vibration, spading, or tamping. Sizes for pipe 10" to 120" and larger. Tongue and groove (as shown) or bell end pipe in any length desired. No matter what size, shape, or length pipe you need, there's a Quinn pipe form made to fit your requirements. Write today for our FREE catalog and estimates.

Also Manufacturers of QUINN CONCRETE PIPE MACHINES
Quinn WIRE & IRON WORKS BOONE, IOWA



For more facts, use Request Card at page 18 and circle No. 354



means longer life to...



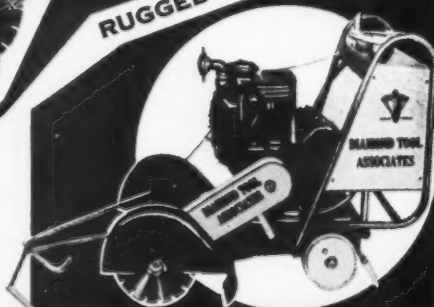
Diamond Cutting Blades

Once again DTA* proves their leadership with "TRI-METRIC PROCESS", the new, exclusive development that guarantees you the finest quality diamond grit fused with the proper bond, grading, concentration and depth of diamond section. Test check and convince yourself that DTA* Diamond Concrete Cutting Blades give you better, faster, less cutting and longer blade life!

RUGGED...ECONOMICAL

6 big reasons why DTA* is your best buy

1. Outstanding research and development.
2. Precise control of manufacturing process.
3. Highest quality diamond BOART.
4. The best in metal bondings.
5. Top quality steel centers.
6. Complete sales and field service by experienced personnel selected for their knowledge of your cutting problems.



DTA Concrete Cutting Machine

The best combination for better concrete cutting... DTA* Concrete Cutting Blade and Concrete Cutting Machine! Lightweight, ruggedly built unit capable of heavy duty work as well as trenching, joint cutting and patching.

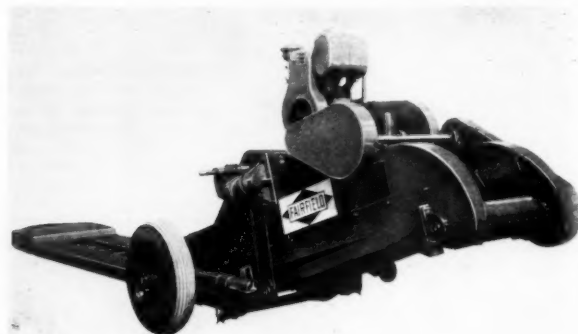
* **DIAMOND TOOL ASSOCIATES**

P. O. BOX 85

HAWTHORNE, CALIFORNIA



For more facts, use Request Card at page 18 and circle No. 355



This Fairfield Model 109 car unloader handles a wide variety of bulk material at capacities up to 185 tons per hour. The unit is engineered for over-the-road portability.

Versatile car unloader handles 185 tons per hour

Its new Model 109 car unloader is announced by The Fairfield Engineering Co.

According to the manufacturer, the combination belt and chain provide positive, non-slip operation at capacities up to 185 tons per hour. The Model 109 handles a wide variety of bulk material and is said to be especially well suited for gravel, stone, and sand.

The 4-ply, 28-ounce belt is 24 inches wide, with 1 3/4 x 1/2-inch steel channel belt cleats. Chain covers with rubber sealing strips are provided for the full length of the unit.

Over-the-road portability is provided by two 6.50x16x6-ply tires with two roller bearings per wheel. A

tow hitch is provided as standard equipment. Total over-all length is 20 feet 10 1/2 inches and over-all width is 33 3/4 inches.

The unit can be powered with either a 5-hp electric motor or an 11-hp gasoline engine.

The Model 109 can be used as an over-the-rail type unloader or it can be used in a standard pit. This versatility makes it extremely adaptable to ready-mix operations for unloading materials onto stock-piling conveyors, according to Fairfield.

For further information write to The Fairfield Engineering Co., Dept. C&E, 324 Barnhart St., Marion, Ohio, or use the Request Card at page 18. Circle No. 165.

New 5-hp chain saw offers many features

A gasoline-powered direct-drive chain saw said to be exceptionally efficient in the 25-pound, 5-hp class is announced by the Mall Tool Co., Division of Remington Arms Co., Inc. Designated the Golden Logmaster,

the new unit features a roller-bearing nose said to boost cutting power by 20 per cent and to reduce friction and give longer wear.

The saw has a self-feeding chain designed to permit freer, faster cut-

Here's the Shore Into Which You Can NAIL AT ANY POINT!



NOTE HORIZONTAL BRACES AT DIFFERENT HEIGHTS, demonstrating how Ellis Shores—although they require little or no nailing for most uses—can have braces nailed to them at any height from bottom to top! You are not limited to one "nailable" spot or prevented from nailing by a metal surface. In addition to this versatility, Ellis Shores are fast and easy to use... strong, safe, economical!

From your plans, our engineers will work out complete suggested methods for top results.

Ellis

MFG. CO., INC.

211 N.W. 4th STREET
OKLAHOMA CITY, OKLA.

For more facts, use Request Card at page 18 and circle No. 356

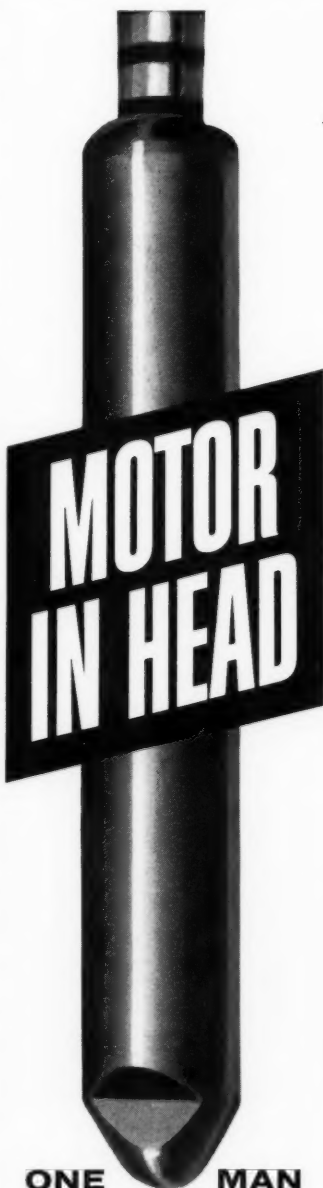
CONTRACTORS AND ENGINEERS

ting with a minimum of pressure, and an improved non-clogging air filter and muffler with built-in spark arrester for increased safety of operation.

Other features of the Golden Log-master include a diaphragm carburetor for all-position cutting, a thumb-button oiler, and a Slim Jim guide bar said to permit easy withdrawal from cuts.

The new tool is available in 18, 24, and 30-inch bar lengths.

For further information write to the Mall Tool Co., Division of Remington Arms Co., Inc., Dept. C&E, 25000 S. Western Ave., Park Forest, Ill., or use the Request Card at page 18. Circle No. 114.



ONE MAN White VIBRATOR

Write for prices and specifications on America's safest, easy-to-handle vibrators with 115 volt AC-DC motor in head. Also new HI-CYCLE model... and flexible shaft models, electric or gasoline engine.

WHITE MANUFACTURING CO.
Elkhart 9, Indiana
For more facts, circle No. 357

Product Parade

Hydraulic water monitor for slurring, tunneling

Its new 3-inch hydraulic water monitor is announced by the Chiksan Co.

The most recent addition to the firm's Intelli-Giant line, the unit's barrel design with its single full-di-



ameter, smooth interior flow is said to sharply check friction loss and provide exceptional ease of handling. It also neutralizes forces which ordinarily cause "whipping".

Even when operated manually this new Intelli-Giant may be easily controlled with one hand at pressures of 30 to 300 psi, the manufacturer reports.

Said to be ideally suitable for use in the construction field for slurring, tunneling, scaling of dam walls and settling of pipe line fills, the unit has a 270-degree horizontal traverse and 120-degree vertical sweep. The hydraulic controls require no power source other than water pressure diverted from the mainstream intake.

For cold climates a closed-circuit hydraulic system is available.

For further information write to the Chiksan Co., Dept. C&E, Brea, Calif., or use the Request Card at page 18. Circle No. 29.

New photocopy machine hikes reproduction speed

A new office photocopy machine said to be twice as fast as other like units, with a 30 per cent greater copying-size capacity, is announced by Cormac Industries, Inc.

Designated the Coronet, the new machine takes less than 15 seconds to make a standard copy, has a maximum copying width of 18 3/4 inches and no limit on length. It reproduces in black-on-white everything that can be seen on the original.

Other features of the unit include a new Micro-Dial control designed to reduce about 80 per cent exposure-setting errors; a trap device which automatically guards against accidental paper insertions; a more simplified access to the exposure section for easier inspection by sales and servicemen; and a new dynamic production gear said to make the machine capable of turning out more than 2,500 letter-size copies in one eight-hour day.

For further information write to Cormac Industries, Inc., Dept. C&E, 80 Fifth Ave., New York 11, N. Y., or use the Request Card at page 18. Circle No. 3.

ANNOUNCING- The Windsor Concrete Groover And Joint Cleaning Machine



PATENT PENDING

SCOPE OF WORK AND OPERATION: Widen or clean, new or old, sawed or hand formed joints in cement or bituminous concrete. Widen sawed joints in new concrete before sealing. Remove old seal material for resealing maintenance jobs, all type joints. Mill and widen, without spalling, random or uncontrolled cracks in cement or

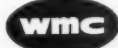
bituminous concrete, to width and depth for proper sealing. Bit will enter a crack 1/32" wide, or will make a groove where no crack exists. **ELIMINATES:** Spalling—Excessive ripped widths—Wasted sealing material—Sandblasting—Heavy costly machines and equipment—Time wasted changing tools.

NEW — FAST — NEAT ECONOMICAL REVOLUTIONARY

The answer to all of your joint, grooving, widening, and cleaning problems, regardless of width, or depth. Cement or Bituminous Concrete.

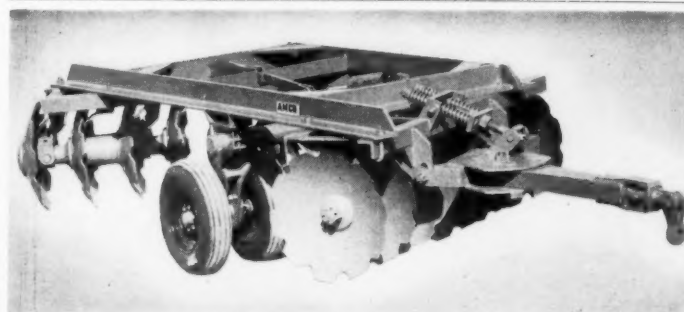
**LOW ORIGINAL COST
LOW COST OPERATION
LOW OVERALL COST**

For Further Information — Write — Wire — Call



windsor machinery corporation

85 Grassmere Avenue, Elmwood 10, Conn. • Tel. Hartford JAckson 3-7306
For more facts, use Request Card at page 18 and circle No. 358



AMCO Brushmaster wheel-type two-way plow

Proven by contractors to be

FAST-ECONOMICAL-PROFITABLE!

TYPICAL AMCO USES...

- LAND CLEARINGS** ... chops weeds — brush — soft sod; softens soil and adds humus to ground for moisture content.
- CUT AND FILL WORK** ... loosens soil before removal. Breaks up top soils in material pit.
- BEATS PLOWING** ... shallow soil disking (aided by wheels) does not bring up subsoil.
- LANDSCAPING OPERATION** ... most effective in erosion prevention. Highway center strips, embankments, ground around buildings and drainage works are disked prior to and after planting. Turns hay and straw in the ground to prevent soil erosion.
- STABILIZING SOIL** ... blends in necessary water and humus — cuts impervious soils to accept moisture.
- AERATION OF SOIL** ... either mixes in additional dry soil or lifts wet soil to dry before compacting.
- SCRATCHING A COMPACTED SURFACE** ... to key in new lift, especially after hard rain.
- EXCELLENT FOR MIXING BASE** materials and stratas for a homogeneous fill.

TYPICAL AMCO JOBS...

- KANSAS TURNPIKE** to recompact soil to a specific density; disc plow cut and turned soil for drying and firmer compaction.
- LAKE CHARLES AIR FORCE BASE** project to aerate soil, remove excess moisture and to work soil into a suitable consistency for firm compaction.
- ON THE GLENDO (WYOMING) DAM** project discs were used on the earth filled portion of the dam.
- THE OKLAHOMA TURNPIKE** was built across rolling land which involved much cut and fill work. Sod was removed and discs used to scarify fill areas — then subgrade recompact to suitable base for fill.
- BERGSTROM AIR FORCE BASE**, Austin, Texas, project to work soil to a suitable base for runways and field.

TYPICAL AMCO FEATURES...

- Fafnir factory sealed ball bearings — no greasing ever.
- First line dual Goodyear tires for transportation and flotation over soft spots.
- Easy adjustability to insure proper mixing and cutting.
- Available in 9', 11', and 13' sizes.
- Rugged, tough worker — ready to go and work anywhere you can put a tractor.

Write, Wire or Call for More Information and Prices

ALEXANDER MANUFACTURING COMPANY

P.O. BOX 407 - PHONE SY 8-4791 - PICAYUNE, MISSISSIPPI
For more facts, use Request Card at page 18 and circle No. 359

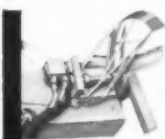


The positive digging action of the Highway earth-boring machine is said to allow it to dig in any type of soil. According to the manufacturer, with the addition of a carbide-tipped auger it will easily handle permafrost. Swingbase units, as shown in this photograph, can dig 9 to 36-inch holes at any angle, and the base can be rotated 180 degrees and extended up to 22 inches. For further information write to Utility Div., Highway Trailer Co., Dept. C&E, 405 E. Fulton St., Edgerton, Wis., or use the Request Card at page 18. Circle No. 86.

fast, low-cost snow removal...

Rivinius Hydraulic SNOW BLOWER

Welded to snow wing of Caterpillar No. 12 or 112 Motor Grader, new hydraulic Rivinius Snow Blower "jet-streams" wind-blown or bladed-up snow and ice far beyond road shoulder. Positive, freeze-safe hydraulic drive, PTO'd from grader engine. No open or extended drive mechanisms to freeze or clog. Full adjustment of snow wing retained.



Propeller Diameter 54"
Propeller Speed 600 R.P.M.
Material all-welded steel plate
Weight approx. 1300 lbs.

RIVINIUS SNOW LOADER

Fits Caterpillar No. 12 or 112 Motor Grader with sliding moldboard... force-loads snow and ice directly into truck without windrowing. Can handle any snow or ice the blade can handle. Independently powered high-speed propeller reduces snow bulk 25% to 50%... trucks carry twice as much per trip. Operator can vary grader speed according to depth of snow... has full view of snow removal and loading... One man cleans streets and loads snow in fast, smooth sweep. On highway, unit blows snow to side of travel lane. Six-bladed blower, 42" dia., 400 R.P.M., 56 H.P. air-cooled engine, all-welded steel plate construction. Approx. weight: 2,000 lbs.

SEE YOUR CATERPILLAR DEALER NOW...OR WRITE:

Rivinius INC., EUREKA, ILLINOIS, U.S.A.

For more facts, use Request Card at page 18 and circle No. 360

T. J. CONNORS, JR., SUPERVISOR OF AUTOMOTIVE EQUIPMENT, CONN. RAILWAY & LIGHTING COMPANY, WRITES:

"HELI-COIL" INSERTS
SAVE US
\$315 Per Engine"



Operating 253 buses in five cities, Mr. Connors' company follows the most advanced engineering practice in reducing maintenance and repair costs. In reconditioning aluminum upper crankcases of gasoline engines, his company uses Heli-Coil Inserts... with major savings.

Mr. Connors writes:

"For permanently repairing worn and stripped threads in 116 holes in each casting with Heli-Coil Stainless Steel Inserts it costs us only \$85.00 per engine—including labor. That's a big saving over the \$400.00 it would cost for a new casting."

Heli-Coil Stainless Steel Inserts may offer you comparable savings. They are stocked nationally by automobile and industrial distributors. Write for full information and distributor list.

*Reg. U. S. Pat. Off.

HELI-COIL CORPORATION
1810 SHELTER ROCK LANE, DANBURY, CONN.
A Division of Topp Industries, Inc.
In Canada: W. R. Watkins Co., Ltd., 41 Kipling Ave., S., Toronto 18, Ont.
For more facts, use Request Card at page 18 and circle No. 361

Fast tool repairs for
Black & Decker® tool owners



Or write direct for address of nearest branch to:

Dept. S3610, TOWSON 4, MD.

Black & Decker®
QUALITY ELECTRIC TOOLS

For more facts, use Request Card at page 18 and circle No. 362

Extra-strength steel is readily fabricated

An alloy steel said to have an extraordinarily high yield strength—90,000 psi or more—is available from the Lukens Steel Co.

Designated T-1, it is said to be three times stronger than ordinary carbon steel, and is readily fabricated.

Among its other characteristics is the ability to withstand impact, abrasion abuse, and pressures at both extremely high and low temperatures.

For further information write to the Lukens Steel Co., Dept. C&E, Coatesville, Pa., or use the Request Card at page 18. Circle No. 128.

Automatic calculator features easy operation

Its automatic printing calculating machine with special Simpla-Key master control lever is available from the Victor Adding Machine Co.

The machine can be easily carried from job to job and no special training is required for its operation, according to the manufacturer. A ten-key unit, it multiplies, divides, adds, and subtracts through only one simple control. The operator merely flicks



the Simpla-Key for the function desired and then enters the figures on the simplified keyboard.

Specific applications, said to be easily performed on the Victor calculator, include estimating the number of bricks needed for facing a building, the cost of paving a given area, the cubic yardage of concrete required to build a foundation, the number of concrete blocks needed to build a block wall, and many others.

For further information write to the Victor Adding Machine Co., Dept. C&E, 3900 N. Rockwell St., Chicago 18, Ill., or use the Request Card at page 18. Circle No. 162.

CONTRACTORS AND ENGINEERS

Hot-mix asphalt plant produces 40 tph

Its new hot-mix asphalt plant, the Unipaver No. 40, is now available from the Cutler Engineering Co.

According to the manufacturer, this plant will produce 40 tph of top-quality asphaltic concrete, using three or more aggregates, accurately proportioned, thoroughly dried, and completely mixed with just the right amount of asphalt cement, cutbacks, or emulsions.

A one-man operation, it can operate both as a continuous-mix plant or as a batch plant, and can make quick stops and starts for efficient handling of small jobs when required.

The Unipaver No. 40 consists of three basic units:

The aggregate feeder and proportioning unit consists of three 15-ton aggregate bins, equipped with proportioning control gates, reciprocating feeders, and belt conveyors for clean handling and feeding to the double-drum dryer and mixer.

The latter unit, the heart of the plant, is said to employ a new and highly efficient method of drying the aggregate and then mixing it with the asphalt, at comparatively low fuel costs.

The third basic unit, the asphalt system, consists of a 5,000-gallon insulated storage tank complete with pump and automatically controlled, built-in heater.

For further information write to the Cutler Engineering Co., Dept. C&E, 5435 W. 63rd St., Chicago 38, Ill., or use the Request Card at page 18. Circle No. 36.

Aluminum-treated tarps remain flexible in cold

A new addition to its line of tarpaulins for the construction field is announced by the H. Wenzel Tent & Duck Co.

Designated AlumiFlame, the new tarpaulin is said to be like two tarpaulins in one, in that it has both



the treatments of FlameZel (fire-resistant treated) and AlumiZel (aluminum-treated) tarpaulins. According to the manufacturer, Alumi-Flame tarpaulins and windbreaks are also water and rot-resistant. Another important feature of Alumi-Flame tarps is that they are flexible even in cold weather.

The new tarpaulins are made with rope-in-hem construction for added strength.

For further information, write to the H. Wenzel Tent & Duck Co., Dept. C&E, 1035 Paul St., St. Louis 4, Mo., or use the Request Card at page 18. Circle No. 173.

For more facts, circle No. 363 →

A 40-ton-per-hour producer, the Unipaver No. 40 hot-mix plant features one-man operation. It can operate both as a continuous-mix plant or as a batch plant, and can make quick stops and starts for efficient handling of small jobs when required.



Now TORQMATIC DRIVE boosts S-7 performance



See your Euclid dealer for more details on this improved S-7 as well as the complete line of "Euc" Scrapers from 9 to 32 yds. heaped.

EVER SINCE it was first introduced the Model S-7 Euclid Scraper has been a top performer and profit maker for owners. Now it's available with 4-speed Torqmatic Drive, a new Torsilastic seat for greater operator comfort, and an improved hydraulic system that provides easier steering and is independent of other scraper operations.

With these new improvements the S-7 is a more productive machine than ever—here are some of the reasons why:

Faster loading because the 4-speed Torqmatic matches engine power to job requirements—provides greater power in the loading ranges to get heaped loads of 9 yds. in a hurry.

Faster cycle time because changes from one speed range to another are made under full power with no loss of momentum—operator can maintain higher average travel speed.

Lower costs because Torqmatic has cushioning effect on entire power train—reduces downtime and maintenance expense.

Easier operation because new Torsilastic seat absorbs road shocks, thus reducing driver fatigue—improved hydraulic system results in easier smoother steering—elimination of manual shifting makes good operators out of mediocre ones.



MORE VERSATILITY at minimum investment ... a 10-ton rear-dump body is interchangeable with scraper bowl for work where rock and heavy excavation must be moved and where close quarter loading and dumping conditions prevail.

EUCLID DIVISION
GENERAL MOTORS CORPORATION
Cleveland 17, Ohio

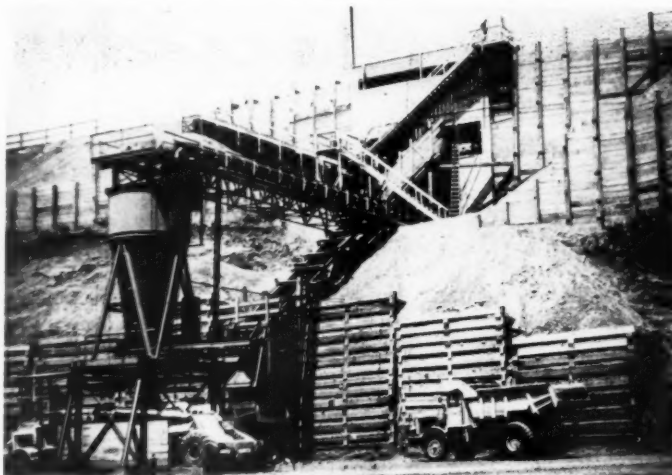


Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE



Currently classifying 1,200 cubic yards of gravel per hour on the Casitas Dam project, Oak View, Calif., are two Universal Wobbler Feeders (over-all view of system shown in photo). Moisture in the material presents a serious problem in the winter months especially, as the area's average rainfall of 12 to 14 inches is concentrated in that season. The fact that the Wobbler Feeder acts as a self-cleaning separator and does not clog in wet or sticky material favored the decision of the Winston Bros. Construction Co., fill contractor on the job, to install the system. For further information about the Wobbler Feeder classifying system, write to the Universal Engineering Corp., Dept. C&E, 625 C Avenue, N.W., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 42.



NOW U.S. SAVINGS BONDS PAY YOU HIGHER INTEREST FASTER!

If you've always bought U.S. Savings Bonds for their rock-ribbed safety, their guaranteed return, the way they make saving easier—you've got one more reason now!

Every Series E United States Savings Bond you've bought since February 1, 1957 pays you a new, higher interest—3¼% when held to maturity! It reaches maturity faster—in only 8 years and 11 months. And redemption values are higher, too, especially in the earlier years.

About your older Bonds? Easy. Just hold onto them. As you know, the rate of interest a Savings Bond pays increases with each year you own it, until maturity. Therefore, the best idea is to *buy the new—and hold the old!*

The main thing about E Bonds, of course, is their complete safety. Principal and interest are fully guaranteed. They are loss-proof, fire-proof, theft-proof—because the Treasury will replace them without charge in case of mishap. Your Savings Bonds are as solid as a rock—backed by the full faith and credit of the United States.

Maybe you already know about Savings Bonds—as one of the 40 million Americans who own them today, or as one of the other millions who have used Bond savings to help pay for new homes, cars, or college educations, or to make retirement financially easier. If so, this is familiar territory to you—you *know* there's no better way to save.

But if you're new to the game, find out about Savings Bonds and what they can do for your future. Ask your banker, or check with your employer about the automatic Payroll Savings Plan that makes saving painless and easy.

PART OF EVERY AMERICAN'S SAVINGS
BELONGS IN U. S. SAVINGS BONDS

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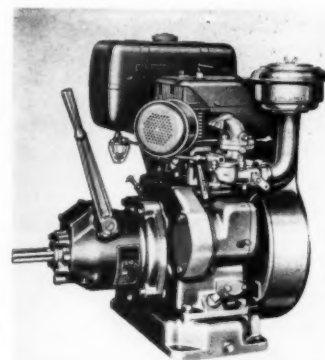


For more facts, use Request Card at page 18 and circle No. 364

New 12½-hp engine features high torque

Its Model AGN 4-cycle, single-cylinder engine is announced by the Wisconsin Motor Corp.

Rated at 12½ horsepower, the unit has a speed range from 1,600 to 3,200 rpm, and a piston displacement of 38.5 cubic inches.



According to the manufacturer, the basic high torque of the Model AGN is one of its outstanding characteristics. This feature is said to provide a lugging power that resists rpm slow-downs under sudden shock loads, preventing stalling and permitting a quick power recovery.

For further information write to the Wisconsin Motor Corp., Dept. C&E, 1910 S. 53rd St., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 148.

Multi-purpose grease unaffected by cold

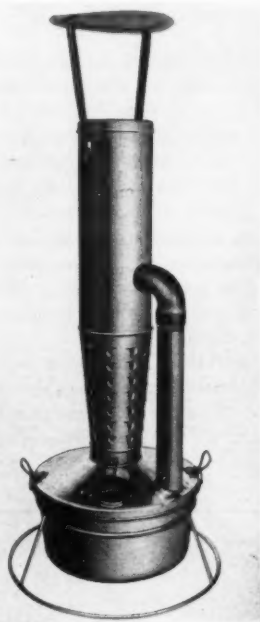
Litholine multi-purpose grease cartridges, featuring ease of pumping in severely low temperatures, are available from the Sinclair Refining Co.

The grease is recommended for chassis, wheel bearings, water pumps, universal joints, and other grease fitting points on all contractor machinery.

The product may be used in any standard grease gun using cartridges of this type, according to the manufacturer.

For further information write to the Sinclair Refining Co., Dept. C&E, 600 Fifth Ave., New York 20, N. Y., or use the Request Card that is bound in at page 18 of this issue. Circle No. 26.

CONTRACTORS AND ENGINEERS



Portable space heater eliminates smoke, soot

A new oil-burning salamander for use in maintaining safe curing temperatures for cement work in freezing weather is announced by the Scheu Products Co.

Designated the Hy-Lo, the unit operates on a return gas principle said to end smoke and eliminate soot. It produces 70,000 to 140,000 Btu's per hour using $\frac{1}{2}$ to 1 gallon of fuel oil, according to the manufacturer. Its large stack with a diffusion hood stands over five feet high and is said to throw a highly effective volume of both radiant and convected heat in all directions.

Also recommended for providing on-the-job warmth for workmen, the Hy-Lo salamander is easily carried from place to place. It weighs only 26 pounds, and its bowl holds ten gallons of oil. It lights with a match and has a damper for easy extinguishing.

For further information write to the Scheu Products Co., Dept. C&E, 302 Stowell St., Upland, Calif., or use the Request Card at page 18. Circle No. 108.

New diesel pile hammer handled by crane

A new diesel pile hammer is announced by the Link-Belt Speeder Corp.

According to the manufacturer, the unit is easily transportable, is completely self-contained, needs no auxiliary equipment, and is one-man controlled.

The use of the new pile hammer reportedly can transform any power crane into a pile driver. A single cable to hoist the hammer into the leads in which it operates, is said to be all that is necessary to position it and to start its operation.

For further information write to the Link-Belt Speeder Corp., Dept. C&E, 1201 Sixth St., S. W., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 154.

Snow, ice, or rain do not interfere with the work progress of this road-patching machine. Designated the Keegan utility patcher, the unit provides permanent patching, and is capable of making approximately 30 tons of hot top per hour. There is no waste since the hot top or binder is made up as needed. For further information write to Keegan Utility Patcher, Dept. F, Dept. C&E, 3830 Monroe Ave., Pittsford, N. Y., or use the Request Card at page 18. Circle No. 127.



"We feel that the usage of the Tractairs is nothing short of essential in our type of operation," says Aaron J. Conner (left). Backfill tamping is only one of many jobs that can be done with the Le Roi tractor-compressor.

Hoist attached to front-end loader lifts pump assembly. The rubber-tired Tractair met contract stipulation of the Selma job that "there was to be no damage to existing street surfaces" during pipe-laying.



Tractair* Cuts Work Interruptions by Two-Thirds

Each Le Roi unit "saves at least \$7.00 per day," general contractor reports.

Self-propelled tractor-compressor provides on-the-job air power without costly delays.

"Since the Tractairs enable us to eliminate work stoppages involved in moving the conventional wheeled, portable compressors from one working area to another on the same job site, we save at least a full day of labor at each construction location," reports Aaron J. Conner, general contractor of Roanoke, Va., who specializes in utility construction work. That's quite a saving when you consider that he employs 20 men, working 10-hour shifts.

He adds that the cost-cutting versatility of his three Le Roi tractor-compressors pays off on highly

competitive municipal construction contracts. His most recent one involves the installation of city water, gas, and sewer lines at nearby Selma, Va.

Old Method Too Costly

Conner's work requires that compressors be moved as many as 10 times a day. With ordinary equipment, each move meant a work interruption of 30 minutes during which the entire compressor crew was idle. As a result, five man-hours were wasted during a normal day. In addition, each move tied up a truck and a moving crew, creating a secondary work stoppage.

"With the mobile Tractair equipment, it takes just one man to walk to the unit, move it directly to the next working area, and set up again, all within a ten-minute period," Conner reports. What's more, the truck and its crew are released for other duties.

Conner states that the best alternate equipment available doesn't approach the Tractair for cutting costs. "Overall labor cost per job is reduced by approximately 5%," he declares. And the Tractair simultaneously "permits us to achieve standards of efficiency we could not otherwise get."

Has Many Uses

Versatility is another Tractair advantage. For example, a hoist mounted on the unit's front-end loader reduced pipe-laying time by 20%. A scoop bucket adapts the tractor-compressor for stockpiling materials and for resurfacing ditch lines. Tractair also provides air power for drilling, tamping, and for air pressure-testing of natural-gas pipe lines.

So, if outmoded equipment is cutting too deeply into your profit, it's time to get a Le Roi Tractair. Write us today for details.

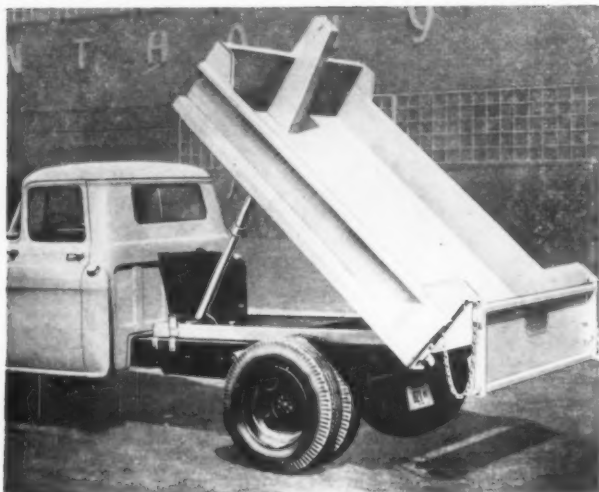
*"Tractair" is the registered trademark for Le Roi's combination tractor-air compressor.



LE ROI Division of Westinghouse Air Brake Co., Milwaukee 1, Wisconsin, manufacturers of Newmatic air tools, Tractair,® portable and stationary air compressors, and heavy-duty industrial engines. Write us for information on any of these products.

For more facts, use Request Card at page 18 and circle No. 365





This all-purpose dump body, available from the Anthony Co., is 8 feet in length and has a 1½-cubic-yard capacity. The hydraulic hoist is the single cylinder, telescopic head-lift type, with a 61-inch stroke.

Utility dump body has 1½-yard capacity

An all-purpose dump body designed especially for 1-ton truck chassis is available from the Anthony Co. Called the Yard Bird, the body is 8 feet long and has a 1½-cubic-yard capacity.

The hydraulic hoist is the single cylinder, telescopic head-lift type, with a 61-inch stroke. Its high pressure cylinder has V-type packing and a 5-ton capacity. Pump reservoir and valve are in a single unit, driven by power takeoff from the truck transmission.

The body itself is made of 12-gage steel and has gussets for adding side-boards. Formed steel cross-members and structural longitudinals give full support to the entire floor area.

According to the manufacturer, the hoist gains more leverage by applying its power directly to the load and well ahead of load center. Because the hoist is forward mounted, more weight is distributed to the front of the truck. For these reasons, more payload is carried on the rear axle.

For further information write to the Anthony Co., Dept. C&E, 1750 Baker St., Streator, Ill., or use the card at page 18. Circle No. 13.

Add new line of joint-sealing equipment

A new line of joint-sealing equipment is announced by the Cutler Engineering Co. Designated Dependon melter-applicators, the units are made in several sizes and are of the double boiler, indirect fired, and oil-bath type. They are offered expressly for melting and applying rubber-bearing joint-sealing compounds.

The machines are said to be easy to handle, simple to operate, and require a minimum of help.

For further information write to the Cutler Engineering Co., Dept. C&E, 5435 W. 63rd St., Chicago 38, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 57.

Improved truck loaders offer many advantages

Its new A500 Series of Holmes-Owen dump truck loaders is announced by the Ernest Holmes Co.

The standard loader with a ¾-yard scoop type bucket is activated by double hydraulic cylinders on each side of the truck to permit the driver to do his own light digging, grading, and loading without additional manpower or equipment. When equipped with a forward-tipping bucket, the loader becomes even more useful in that it can load other trucks as well as itself.

According to the manufacturer, the forward and upward motion of the bucket permits loading from a stand-

still without depending upon the traction of the truck. The elbow action of the lifting arms is said to provide a fast overhead motion with complete inversion and emptying of the load into the truck body without spillage or the need of a cab protector.

The new loaders can be used with any standard dump truck body, and may be installed on most 2, 2½, or 3-ton trucks of either conventional or COE design.

For further information write to the Ernest Holmes Co., Dept. C&E, 2505 E. 43rd St., Chattanooga 7, Tenn., or use the Request Card at page 18. Circle No. 166.

Pick your favorite with a "Jimmy" Diesel

GM DIESEL ENGINES POWER LEADING MAKES OF A



This new loader features... with complete... of the... spillage or th... The uni... standard dur...

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TODAY
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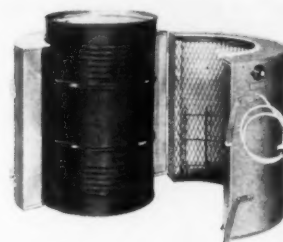


This new Holmes-Owen truck loader features fast overhead motion with complete inversion and emptying of the $\frac{3}{4}$ -yard bucket without spillage or the need of a cab protector. The unit is adaptable to any standard dump truck body. ▶

Automatic drum warmers offered in four sizes

Two new sizes of drum warmers are announced by The Harold L. Palmer Co. The units are now available in 14, 16, 30, and 55-gallon capacities.

Designed to heat grease, resins, tar, asphalt, paints, heavy oils, and other viscous materials that handle better when warmed, all models have automatic temperature control in a choice of two ranges: 100 to 450 degrees F. or 60 to 250 degrees F. This makes the



Automatic drum warmers

warmer a portable oven, eliminating the handling of hot drums. Well-insulated, hinged valves fit around the drum with a flexible top gasket allowing for variations in drum diameters, yet assuring snug fit and preventing heat loss.

The warmers are said to be ideal for heating drums overnight for morning use of contents; for maintaining required temperatures over a period of time; and as a heating jacket when mixing small batches at controlled temperatures. They can also be used in combination with mechanical agitators.

For further information write to The Harold L. Palmer Co., Dept. C&E, 2980 W. Davison Ave., Detroit 38, Mich., or use the Request Card at page 18. Circle No. 122.

New electronic detector for underground pipes

Its Model LC-5 Dualtronic pipe locator-leak detector, a portable instrument designed to pinpoint the exact location of underground objects such as pipes, valves, risers, storage tanks, and other metallic structures, is announced by The Goldak Co., Inc.

With this instrument, one man can pinpoint a break or leak in a given line in a matter of minutes even under the most unfavorable winter-weather conditions, the manufacturer reports.

Consisting of a transmitter and receiver, each measuring 9x12x3 inches and each containing its own power supply, the unit is reportedly capable of separating pipes that are a matter of a foot or two apart.

Additional attachments included with the unit are a crystal microphone, and a bell clamp and probe to permit the user to locate leaks in liquid lines, high pressure gas lines, and pipes under vacuum.

For further information write to The Goldak Co., Inc., Dept. C&E, 1544 W. Glenoaks Blvd., Glendale 1, Calif., or use the Request Card at page 18. Circle No. 125.

Ingersoll-Rand

DAVEY



LINCOLN
ARC WELDING EQUIPMENT

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Chicago Pneumatic

WORTHINGTON

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JOY



MAKES OF AIR COMPRESSORS AND WELDERS



TODAY the list of contractors who operate—and manufacturers who build—air compressors and electric welders powered by General Motors Diesels reads like a "Who's Who" of the industry.

Operators around the world have found that these modern 2-cycle Diesel engines pack more power in less space and weight—pick up under load faster than 4-cycle engines—deliver a smoother, steadier flow of power that gets work done faster.

These compact engines are designed for easier, lower-cost maintenance. Unit injectors eliminate complex fuel systems and troublesome high-pressure lines. Smaller size makes the GM Diesel more easily accessible for servicing.

Above all, interchangeable GM Diesel parts make it unnecessary to carry large, expensive parts inventories. In the 71 Series, practically all of the wearing parts are interchangeable regardless of engine model. This makes it easy to

have the right part available when needed—speeds repairs—gets equipment back on the job with less down-time. And GM Diesel parts cost up to 60% less than comparable parts for competitive engines!

The superior performance and dependability of GM Diesels are backed by a world-wide network of distributors and dealers—with complete parts stocks and service facilities readily available throughout the United States and Canada, as well as overseas.

For more information, consult your GM Diesel distributor or write us.

DETROIT DIESEL ENGINE DIVISION OF
GENERAL MOTORS, DETROIT 28, MICHIGAN

REGIONAL OFFICES: New York, Atlanta,
Detroit, Chicago, Dallas, San Francisco

IN CANADA:
GENERAL MOTORS DIESEL LIMITED,
London, Ontario

Parts and Service World-wide



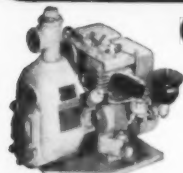
IT PAYS TO STANDARDIZE ON...

Available in 1485 applications of power equipment built by more than 175 manufacturers

For more facts, use Request Card at page 18 and circle No. 366

RICE PUMPS

THE LINE THAT IS COMPLETE



LIGHTWEIGHTS

1½" - 2" - 3"

- 5500 to 18,000 GPH
- Iron or Aluminum
- Powered with 4 Cycle Air-Cooled Gasoline Engines

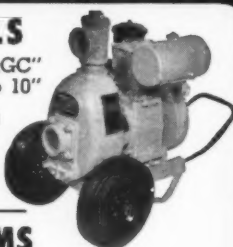
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CENTRIFUGALS

All Standard "AGC" Sizes from 1½" to 10"

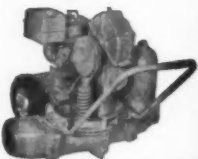
- Air and Water Cooled Power
- Modern Design
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DIAPHRAGMS

2" - 3" - 4" Singles Big 4" Double

- Single or Double
- Lightweight
- 48:1 reduction
- Gearing fully enclosed and operates in oil.



RICE PUMP & MACHINE COMPANY

228 PARK AVENUE

BELGIUM, WISCONSIN

For more facts, use Request Card at page 18 and circle No. 367



Integrated concrete beams and columns support tons of piping!

Pipe supports for chemical plant.

Photo shows method of beam tie-in.

Concrete beam tie-in simplified . . . round concrete columns erected with SONOCO SONOTUBE® Fibre Forms

Pipe supports for a chemical plant consist of an integrated reinforced concrete beam and column structure.

Sonoco SONOTUBE Fibre Forms were used to erect the round concrete columns. Prior to pouring, openings cut into the fibre forms were blocked with wood carrying reinforcing steel "dowels" through the diameter of the form.

After the pour and necessary curing time, the forms were stripped and the steel dowels were welded to the reinforcing steel of the concrete beams. A simple box form was then used to grout the beam tie-in.

Versatile, low-cost Sonoco SONOTUBE Fibre Forms save time, money and labor in the construction of underpinning, piers, piles and supporting columns.

In sizes from 2" to 48" I.D., up to 48' long. Order in specified lengths or saw to requirements on the job.

See our catalog in Sweets

For full information and prices, write



2752

SONOCO PRODUCTS COMPANY

CONSTRUCTION PRODUCTS DIVISION
HARTSVILLE, S. C.

LOS ANGELES, CAL.

5955 SOUTH WESTERN AVE.

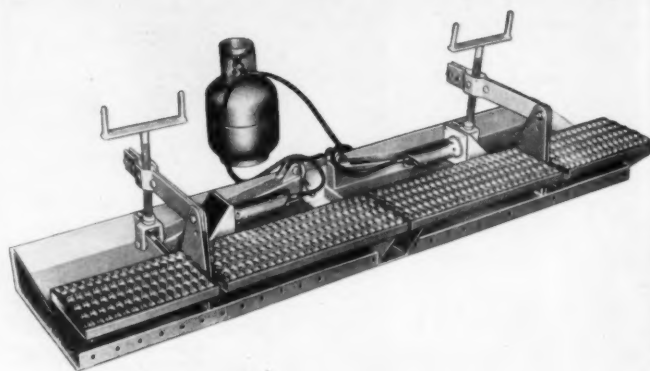
MONTCLAIR, N. J.

14 SOUTH PARK STREET

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For more facts, use Request Card at page 18 and circle No. 368

Product Parade



Designed to mount on the Miller towed asphalt paver is this heated screed for cold-weather operations. The screed heats instantly to 250 degrees F, permitting heat shut-off between truck loads without lost time and fuel.

Offer heated screed for towed asphalt paver

A heated screed for use with the Miller towed asphalt paver is available from the Miller Spreader Corp. The new screed has all of the features of the standard Miller screed, plus a system that heats instantly to 250 degrees F. designed to insure a better match on joints.

According to the manufacturer, the unit's rapid initial heating permits heat shut-off between truck loads without lost time and fuel. The use of propane gas eliminates dangerous oil spillage on asphalt and does away

with pulling action on fine top or thin patching. Indirect fire insures uniform heat throughout.

The unit is equipped with one empty 20-pound propane gas cylinder, hoses, fittings, two 52,000 Btu burners, and removable combustion chambers. Each burner is said to use about ½ pound of gas per paving hour.

For further information write to the Miller Spreader Corp., Dept. C&E, 4020 Simon Road, Youngstown, Ohio, or use the Request Card at page 18. Circle No. 105.

Hydraulic steering unit for motor graders

A new hydraulic steering unit for Caterpillar motor graders is announced by Rivinius, Inc.

Called a torque booster, the unit is said to be compact, and is easily installed high on the steering shaft.

Besides furnishing easier steering

control, the torque steering booster will also supply power for hydraulic moldboard shift operation.

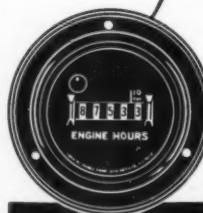
For further information write to Rivinius, Inc., Dept. C&E, 406 S. Darst St., Eureka, Ill., or use the Request Card at page 18. Circle No. 157.

**For better performance and longer service
get protective maintenance done *On time!***



Hobbs ENGINE HOUR METERS TAKE AWAY THE GUESSWORK

Beat down-time through timely maintenance . . . know WHEN lubrication, oil change, overhaul, etc., are due. Today's engineers recommend maintenance in terms of operating time instead of distance . . . the Hobbs Engine Hour Meter provides that information. Not a revolution counter, but a true electric timing instrument recording HOURS and MINUTES. Ruggedly built . . . simple to install . . . easy to read. For both gasoline and diesel engines. Approved and recommended by leading manufacturers. See your factory branch, representative, distributor . . . or WRITE:



JOHN W. Hobbs CORPORATION
2067 YALE BLVD. SPRINGFIELD, ILLINOIS

A DIVISION OF



For more facts, use Request Card at page 18 and circle No. 369

CONTRACTORS AND ENGINEERS

A variety of snow-removal attachments is available for all Payloader models. Blower attachments, such as the one illustrated, may be quickly mounted in place of the bucket and operate under their own power. One-way reversible blades are also available, as are V-plows for street and highway work where high maneuverability is necessary. The Payloader hydraulic lift helps keep the plow free in these operations, enabling it to buck the heaviest drifts. For further information about these attachments, write to the Frank G. Hough Co., Dept. C&E, 822 Seventh Ave., Libertyville, Ill., or use the Request Card at page 18. Circle No. 103.



Drill bores holes up to 14 inches in diameter

Its Pennndrill Model E has been re-designed for drilling holes up to 14-inch diameter, Pennsylvania Drilling Co. announces. It is a complete drilling unit, easily operated by one man.

According to the manufacturer, the Model E requires no set-up time and presents no problems for drilling holes close to walls or in corners.

The penetration speed is said to average 1 to 3 inches per minute, depending on the degree of hardness of material, and the amount of steel encountered. It will drill through concrete walls or floors, reinforced concrete, marble, granite, tile, glass, and brick.

The Model E is light and portable, requires only 115-volt ac or dc current, and is adaptable for drilling vertical, horizontal, and angle holes. Power units are also available for 220-volt operation.

For further information write to the Pennsylvania Drilling Co., Dept. C&E, 1201 Chartiers Ave., Pittsburgh, Pa., or use the Request Card at page 18. Circle No. 5.

Announce new concept in engine design

A new engine design said to open the door to an entirely new concept in the science of internal combustion is announced by the Hamilton Division of the Baldwin-Lima-Hamilton Corp.

A radically advanced design of the free piston engine, the new power source appears to have enormous potential for off-highway power-driven vehicles.

The free piston engine produces pneumatic power, in contrast with the crankshaft engine which produces mechanical shaft power. The pistons are free to bounce in their cylinders; they are restricted by the cylinders, but not by the linkage through connecting rods for a crankshaft as are the pistons of a crankshaft engine.

According to the manufacturer, the engine is possibly the most efficient user of fuel ever developed and can burn a wide range of fuels.

For further information write to the Hamilton Division, Baldwin-Lima-Hamilton Corp., Dept. C&E, Hamilton, Ohio, or use the Request Card at page 18. Circle No. 98.

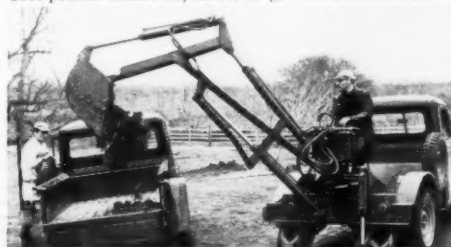


4-wheel drive traction. The rugged Universal 'Jeep'®, with the extra traction of its 4-wheel drive, is an all-purpose workhorse, whether providing transportation for initial surveys, taking men and tools to their assignments, or carrying supervisory personnel for inspection work. It carries 7 workers or up to half a ton of equipment and supplies, tows heavily loaded trailers on the road or off.

Why 'Jeep' versatility and all-wheel traction save time and manpower for contractors!



The new and bigger Forward Control 'Jeep' FG-170 Truck. This 7,000-lb. GVW workhorse puts a 9-ft. pickup box on a 103 1/2-inch wheelbase. You get unequalled cargo space per inch of wheelbase, plus 'Jeep' maneuverability to carry payloads up to 3500-pounds almost anywhere, in good weather or bad.



Mobile power. The 'Jeep' Truck, with hydraulically-operated back hoe, digs foundations, laterals or drainage ditches and does other time and money-saving jobs. It fills the gap between hand digging and heavy-duty earthmoving equipment.

In their weight class, 'Jeep' vehicles are the *only* vehicles originally designed and engineered completely for 4-wheel drive, off-the-road use. That's why they're matchless for year 'round construction operations, in good weather or bad.

These versatile vehicles have proved their all-around mobility and wide range of performance on countless construction projects! Their rugged functional design stands up to the toughest use—and the extra traction of their time-tested and performance-proved 4-wheel drive takes them up steep grades—through mud, sand and soft earth—anywhere they have to go in or around the construction site. For highway travel they shift easily into conventional 2-wheel drive. And with power take-off they operate many types of equipment from winches to back hoes.

Multi-purpose 'Jeep' vehicles supplement heavy-duty equipment, spread their costs over a wide variety of jobs, give you additional savings through long life and low maintenance costs. Ask your Willys dealer for a practical, on-the-job demonstration.

The 'Jeep'

family of 4-Wheel-Drive vehicles
WILLYS...makers of time-tested utility vehicles

*Model CJ-5 shown

WILLYS MOTORS, INC., TOLEDO 1, OHIO

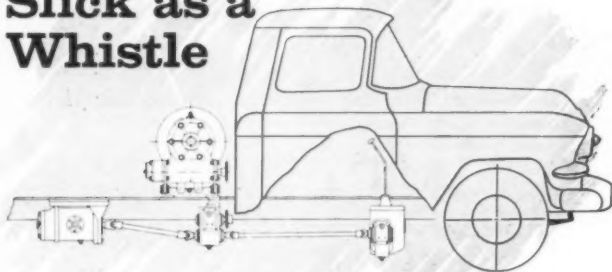
For more facts, use Request Card at page 18 and circle No. 370

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the Request Card at page 18.

Product Parade

BRADEN TRUCK WINCHES

Slick as a Whistle



Pictured here is just one of the many variations of a BRADEN back-of-cab winch installation. Every part is designed to fit in its place with the minimum of effort.

There is a BRADEN Winch to fit every make and model of truck. And BRADEN models are designed for both back-of-cab and front mounting. Capacities range from 6,000 to 100,000 pounds. Specify BRADEN Winches . . . and be sure!

WRITE
FOR
CATALOG

BRADEN WINCH COMPANY
P.O. Box 547, Broken Arrow, Oklahoma



In service around the world

For more facts, use Request Card at page 18 and circle No. 371



One of the new line of Trailmobile dump trailers, this model features a double telescopic underbody hoist. Body capacities of the new units range up to 25 tons.

New dump trailers rated up to 25 tons

A new line of dump trailers with body capacities ranging up to 25 tons is announced by Trailmobile, Inc.

Body heights in the new trailers range from 12 to 72 inches, lengths from 14 to 24 feet. Special body options are available, such as standard or heavy-duty hardware, square 18-inch radius corners, or 58-inch semi-round front construction.

Hoist arrangements include front mount telescopic, twin telescopic underbody, single telescopic underbody, and twin piston underbody.

To satisfy exact hauling needs, either the reinforced channel HD chassis or the rugged I-beam ID

chassis can be specified. HD main rails are 15 inches deep, die-formed from 5/16-inch high-tensile steel to provide rigid support for normal use with single-axle tractors. In the ID chassis, 16-inch deep, high-tensile I-beams with 7-inch flanges provide the extra support required for double-tandem applications.

Both chassis are available with single or tandem axles and extra wide, extra-leaf springs for added stability.

For further information write to Trailmobile, Inc., Dept. C&E, 31st and Robertson Aves., Cincinnati 9, Ohio, or use the Request Card at page 18. Circle No. 88.

Control valves feature low pressure drop

First to be announced in a new line of Parker hydraulic directional control valves for earthmoving, material-handling, and other mobile

equipment, is the VDP2 series nominally rated at 20-gpm capacity.

According to the manufacturer, these valves are engineered to provide excellent metering characteristics in raising, positioning, rotating, holding, or lowering operations, and feature exceptionally low pressure drop. They are available in 1, 2, 3, 4, and 6-spool models. Recommended operating pressure is up to 2,000 psi.

Lower Operating Costs ...

WITH THE

Athens

"Super" HARROW



Athens "Super" Harrow S20-28
Weight 7950 Pounds

Construction men who know the value of mixing . . . compacting and land clearing equipment, expect not only faster . . . more efficient production, but rugged equipment that will lower operating costs. ATHENS "Super" heavy duty Plowing Harrow will do just this . . . see your nearest Athens Dealer . . . write or call us for complete information.



Exclusive Feature . . .
Disc Blades cannot turn . . .
Discs locked securely on
axle housings.

ATHENS PLOW COMPANY



ATHENS, TENNESSEE, U.S.A.



Parker directional control valve.

Open-center parallel circuit design permits independent or simultaneous operation of two or more cylinders or hydraulic motors at one time.

For further information write to the Industrial Hydraulics Div., Parker Appliance Co., Dept. C&E, 17325 Euclid Ave., Cleveland 12, Ohio, or use the Request Card at page 18. Circle No. 46.

CONTRACTORS AND ENGINEERS

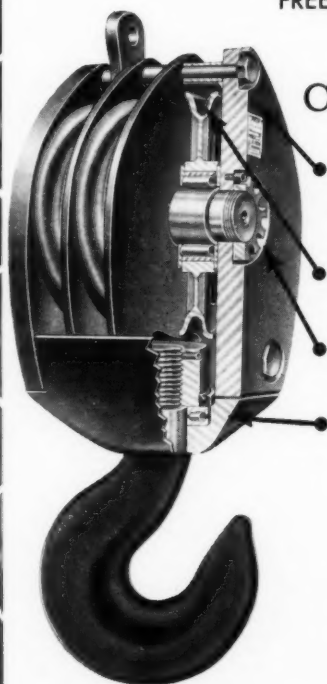


A new process for upgrading gravel deposits is announced by the Construction Equipment Division of the Blaw-Knox Co. It is now possible, according to Blaw-Knox, to mechanically grade gravel, removing soft stones from the aggregates needed in construction. The plant is of relatively simple design, its primary components consisting of bins, elevators, conveyors, vibratory feeders, and impact plates. Materials, Blaw-Knox states, can be graded to any desired soft stone percentage. The plant shown is now in operation at a pit of the Whittaker & Gooding Co. near Ann Arbor, Mich. It can be operated and maintained by personnel ordinarily employed in gravel-pit operations. For further information write to the Construction Equipment Div., Blaw-Knox Co., Dept. C&E, 40 Charleston Ave., Mattoon, Ill., or use the Request Card at page 18. Circle No. 15.

Completely STREAMLINED

FREE OF ALL OBSTRUCTIONS

DELUXE CRANE BLOCK



- Extra Heavy Steel Plate Completely Shrouds Sheaves
- Alloy Steel Sheaves with Flame Hardened Groove
- Extra Large Center Pins and Bearing Diameters
- Timken Thrust Bearing for Free Swivelling Under Loads

McKISSICK BUILDS A BETTER
BLOCK FOR EVERY PURPOSE

McKISSICK

McKISSICK PRODUCTS CORPORATION
Box 2496 Tulsa, Oklahoma

For more facts, use Request Card at page 18 and circle No. 373

Campbell Cab for ... "Caterpillar" D8 and D9 Tractors

HEAVY DUTY—all metal construction to withstand rugged work conditions.

FULL VISIBILITY—360° horizontal visibility.

SAFETY GLASS—windows throughout mounted in locking rubber channels minimizes vibration and breakage. Assures a weather-tight cab.

VENTILATION—doors on both sides of the cab can be locked open or removed for summer-time ventilation.

ENTRANCE & EXIT—two full doors, one on each side of the cab provide easy entrance and exit.

EMERGENCY ESCAPE HATCH—top panels inserted in rubber moulding can be knocked out from inside and used as an escape hatch in case of emergency.

Height .. 57"
Width .. 54"
Length .. 58½"

Easy to install—cab is installed by bolting to tractor fender and floor boards. Installation time—approximately 2½ hours.



CAMPBELL DETACHABLE CAB CO. • WAUCONDA, ILLINOIS

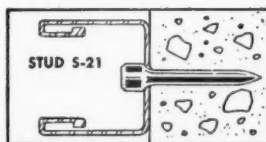
For more facts, use Request Card at page 18 and circle No. 374

Just one of **101** Stud Driver uses!



No outside power source required—

Anchor flexible framing section to concrete or steel in seconds with the Remington Stud Driver



Flexible Framing Section Guard fits snugly over work, assures accurate placement of stud. 22 caliber Power Load drives Remington S-21 Stud in place... permanently, arrow straight!

You can easily anchor metal section to concrete without laborious hammering or drilling! Just squeeze the trigger, and the Stud Driver sets a ¼" or ¾" diameter metal stud... up to six a minute, either size. Barrel change-over takes only 90 seconds, *right on the job!* Over 40 Remington Studs to choose from, plus scientifically graded Power Loads that furnish *exact* driving force for toughest jobs. Take the tool anywhere, use it anywhere for light, medium or heavy-duty fastening.

FREE BOOKLET shows how you can save with the Stud Driver. Mail the coupon for your copy.



Remington

DU PONT

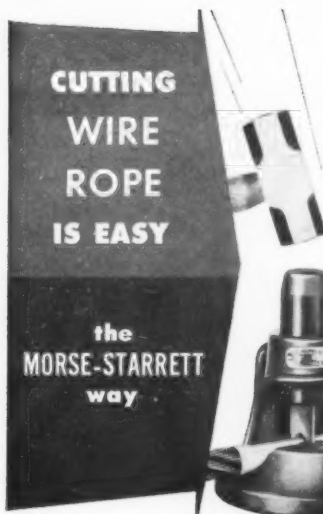
STUD DRIVER

Industrial Sales Division, Dept. CE-10
Remington Arms Company, Inc.
Bridgeport 2, Conn.

Please send me your free booklet which shows how I can speed the job and save with the Stud Driver.

Name _____ Position _____
Firm _____
Address _____
City _____ State _____

For more facts, use coupon, or Request Card at page 18 and circle No. 375



FAST — Especially designed cutting blade and dies assures fast cutting action. The hammer principle eliminates any special skill requirements.

CLEAN — Wire rope ends are cut smooth and clean for perfect threading or splicing.

SAFE — The enclosed cutting blade locked in the body of the cutter assures perfect safety.

PORTABLE — Models for tool kit or stationary operation. With cutting capacities up to: 1 inch 1-1/16 inch, 1-1/2 inch.

SEE YOUR DEALER OR
WRITE DEPT. "B"

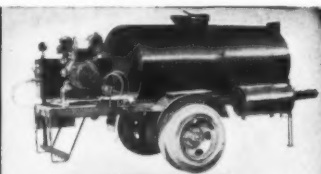
**MORSE-STARRETT
PRODUCTS COMPANY**

1204 - 49th AVENUE, OAKLAND 1, CALIF.

For more facts, use Request Card at page 18 and circle No. 376



BITUMINOUS DISTRIBUTOR
Front or rear mounted for truck or trailer
... with pressure metering.



MAINTENANCE UNIT
Heating and spraying unit ... 2-wheel
or truck mounted.



SUPPLY TANK
Truck or semi-trailer mounted ...
single or tandem axle.



ROSCO-FACTOR
9 or 13 wheel roller ...
90 to 125 cubic feet capacity.



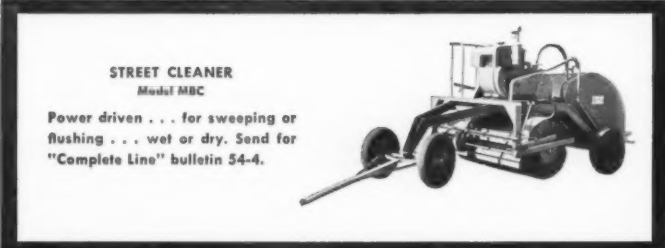
ASPHALT KETTLE
2-wheel pneumatic mounted ...
hand or power spray.



ROAD SWEEPER
Two way ... power driven,
full 4-wheel trailer mounted.



STREET FLUSHER
Truck mounted as shown
or 2-wheel model for towing.



STREET CLEANER
Model MBC
Power driven ... for sweeping or
flushing ... wet or dry. Send for
"Complete Line" bulletin 54-4.

a partial showing
of the complete

**ROSCO
LINE**

of construction
and maintenance
equipment for

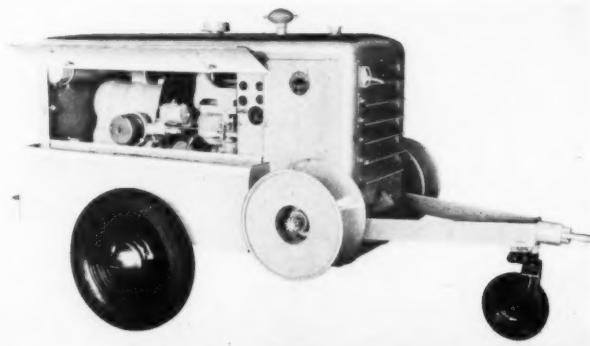
- HIGHWAYS
- STREETS
- AIRPORTS

Send for
"Complete Line" bulletin 54-4.



For more facts, use Request Card at page 18 and circle No. 377

Product Parade



Announce new multi-stage rotary compressor

A new 125-cfm multi-stage rotary compressor, said to have less than one half the working parts of many other current models, is announced by the Davey Compressor Co.

Designated the Davey Hydrovane Rotary 125, the unit features a single free-floating rotor. The latter is so located that it is constantly concentric with one side only of the stator. Its blades are of the segmented type, inserted radially in longitudinal slots. They move continuously in a straight line from the stator center and cannot "cock" or bind.

Other new features include both primary and secondary intake air cleaners, 3-stage oil separator, and single adjustment, vacuum-hydraulic, supply-demand control. Sight windows are provided for visual inspection of lube oil conditions and the oil separation process.

The unit is available in 2-wheel trailer and skid mountings.

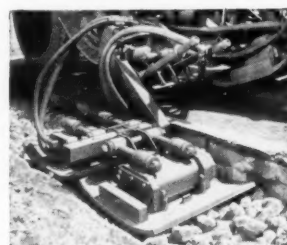
For further information write to the Davey Compressor Co., Dept. C&E, Franklin Ave., Kent, Ohio, or use the Request Card at page 18. Circle No. 21.



Cut your high-density compaction costs with the LIMA ROADPACKER

Macadam Bases—Coarse aggregate for bases up to 12 in. thick can be spread in a single layer, then uniformly compacted to final density by the Roadpacker over a 13 ft., 1 in. width. This single course construction, possible only with vibrators, reduces spreading time by half. Also it eliminates the need for backtracking all the equipment for the second pass; and contour shaping is done once—instead of twice. In waterbound work, the Roadpacker's tamping and vibrating action runs in screenings solid from top to bottom. Only three spreads of screenings are required, and much of the hand labor of spreading, brooming and rolling is eliminated.

Gravel Subbases and Soil Cement Bases—Specified density is obtained in one to three passes, depending on material and depth. Because the Roadpacker compacts equally well traveling forward or in reverse, there's no deadheading when two or more passes are needed. Vertical packing action prevents troublesome shoving on difficult materials and does not drift the spread down on super-elevations.



Widener Attachment—Vibrating shoes compact material in widening trench while Roadpacker runs on existing pavement. Easily adjusted for various width trenches.

ROADPACKER FEATURES

- **Low maintenance**—Rugged vibrator shoes are pressure lubricated and actuated hydraulically through a completely sealed system. There are no exposed moving parts, no oil levels to check, no breather holes through which oil can escape.
- **Fast and maneuverable**—Highway speeds up to 28 mph, reverse speeds up to 7 mph. Steers easily. For work in tight places, can be operated with only four shoes. Shoes can be folded in easily and need not be removed from machine.
- **Easy to operate**—Operator is above dust, away from engine heat and exhaust for maximum comfort and efficiency. He has excellent visibility... controls are readily accessible.

Get all the facts on the new Lima Roadpacker—write for your copy of the Roadpacker bulletin today.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA ROADPACKER



BALDWIN-LIMA-HAMILTON
Construction Equipment Division—LIMA WORKS

OTHER DIVISIONS: Austin-Walton • Eddystone • Electronics & Instrumentation
Hamilton • Leamy-Hydropress • Madsen • Pelton • Standard Steel Works

For more facts, use Request Card at page 18 and circle No. 378

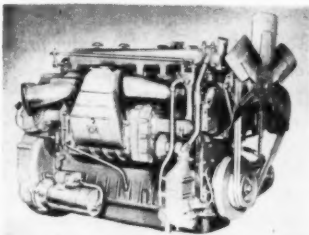
CONTRACTORS AND ENGINEERS

New diesel engines in 4 and 6-cylinder models

A new line of diesel engines designed for installation as original equipment in 4 and 6-cylinder model trucks is announced by the Detroit Diesel Engine Division of the General Motors Corp.

Designated series 71-E and 71-T, the engines will power trucks ranging from 26,000 pounds gross weight to 60,000 pounds gross vehicle weight and up.

The E series has four exhaust valves per cylinder, instead of the



conventional two, to insure the expelling of all exhaust gases. Its fuel injectors have a newly designed spray tip said to more completely atomize the fuel for more efficient combustion and to reduce fuel consumption.

The 4-cylinder 71-E has a basic brake horsepower rating of 140 horsepower at 2,100 rpm; the 6-cylinder is rated at 210 horsepower at 2,100 rpm.

The 71-T series includes a turbo-charger operated by the engine's exhaust gases, which increases horsepower without additional fuel consumption. Its 4-cylinder model has a rated horsepower of 171 at 2,300 rpm; the 6-cylinder, 236 at 2,100 rpm.

For further information write to the Detroit Diesel Engine Division, General Motors Corp., Dept. C&E, 13400 W. Outer Drive, Detroit 28, Mich., or use the Request Card at page 18. Circle No. 111.

FOR SAFE AND SPEEDY HOISTING

Heavy construction calls for heavy-duty blocks and MADESCO blocks combine the performance features developed through 30 years of specialized engineering for the construction field. Heavy steel shells and fittings, heavy iron or steel and graphite-bronze, self lubricating sheaves are grooved to give you the maximum return for your rope investment. Sheaves equipped with bronze or anti-friction bearings for easy operation and long service.

Our special service departments will help you with their recommendations. Write for our catalog or consult your equipment dealer who can supply you with MADESCO products.



MADESCO
BLOCKS

MADESCO TACKLE BLOCK CO.
EASTON, PA.
Engineered to Serve
Your Special Service Needs

For more facts, circle No. 379

OCTOBER, 1957

Recommended for use as a snow-removal unit, this Arps utility blade is made to fit most popular make tractors. The standard blade is 6 feet long, and 1-foot end extension pieces are available, making a total length of 8 feet. One man can easily handle the adjustments of height, tilt, angle, pitch, and offset, which may be made without removing bolts or using wrenches. For further information write to the Arps Corp., Dept. C&E, New Holstein, Wis., or use the Request Card at page 18. Circle No. 126.



OLIVER SUPER 88 with Hydro-Trencher



"Digs rings around my 1½-yd. shovel,"

SAYS NEW YORK CONTRACTOR

Nick Garito of Larchmont, N. Y., doesn't mince words about the performance of his Oliver Super 88 with Hydro-Trencher.

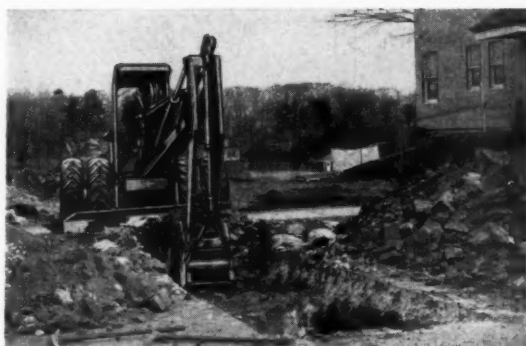
On this job at New Rochelle he dug 100 ft. of sewer trench in heavy rock in just 16 hours. Compared with two different types of competitive equipment, he states that the Oliver is faster and requires only one man instead of two. And production, particularly in this kind of work, surpasses his bigger capacity machines.

Bites into rock or frozen ground

The tremendous down pressures of the Super 88 Hydro-Trencher make it possible to force the bucket through the hardest ground. One owner reports digging through as much as four feet of frozen ground at temperatures of 20° below zero.

Another plus value is the ability of the Super 88 to work in tight places where other machines can't maneuver. "My Oliver Super 88 has been so outstanding that three other contractors in the area have bought Oliver 88's," says Nick Garito.

Ask your Oliver distributor for the facts. Or write for literature.



Ripping up concrete pavement after use of air hammer is only the start of this tough assignment. With chopping action of hoe bucket the Super 88 loosens and digs rock. Dual hydraulic controls and 180° swing provide a fast cycle.



THE OLIVER CORPORATION

400 West Madison Street, Chicago 6, Illinois

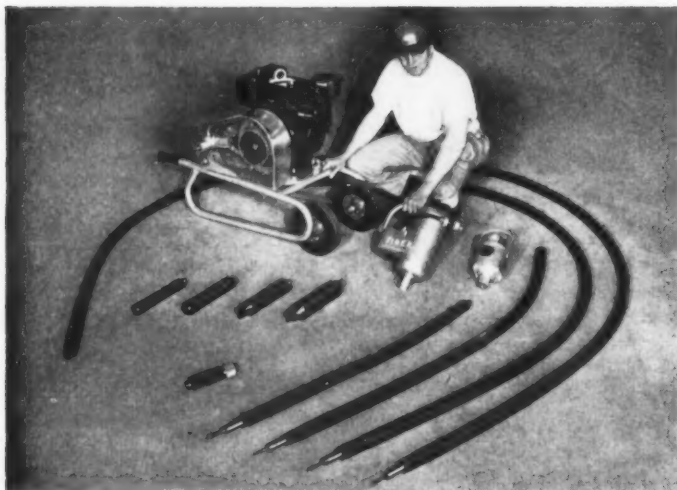
a complete line of industrial wheel and crawler tractors and matched allied equipment

For more facts, use Request Card at page 18 and circle No. 380



A total of 350 20x20-foot Hoosier canvas tarpaulins were used in the construction of the cover. Photo shows a close-up view of the heating and blowing equipment used in the curing operation.

How Viber Answers All Your Problems on Concrete Vibration



You reduce your capital investment—reduce your day-to-day operating and maintenance costs—and answer all your vibrating problems—by standardizing on Viber vibrating equipment.

You discover that the Viber line is the most complete line available—and that Viber internal vibrators driven by flexible shaft are the most versatile. With just 12 basic components, as shown in the photo, your men quickly and easily assemble any one of 48 shaft-driven vibrator combinations.

You use electric, pneumatic or gasoline power—whichever is most convenient for the particular job.

You have a 1 3/4" diameter vibrator head to assure efficient compaction in narrow forms, or where reinforcing

steel is closely spaced. You also have larger, interchangeable heads (2 1/4", 2 1/2" and 3" diameter), which are recommended for maximum efficiencies in more open forms.

You have a choice of flexible drive shafts in these lengths: four, six, 12 and 21 feet. Because all shafts are immediately interchangeable with any required Viber head and motive power, you can immediately adapt to a wide range of applications in narrow to moderately open forms. Shafts can be coupled to provide longer reach.

A wide variety of other types of Viber vibrators are available to answer all your concrete vibration problems—with the lowest possible capital investment and least possible operating costs.



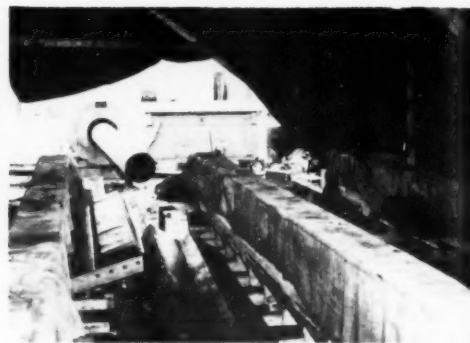
For factual information, illustrated literature and the name of your nearest distributor, write Viber Company, 726 South Flower St., Burbank 21, California.

VIBRATORS

Pioneers and leaders in the manufacture of vibrators.

For more facts, use Request Card at page 18 and circle No. 381

Interior view of heating enclosure. Hot air was blown into the enclosure, insuring a proper curing of the post-tensioned members.



Post-tensioned beams cured under tarps

Winter weather was effectively counteracted at the International Business Machine Corp.'s new Electric Typewriter Division plant at Lexington, Ky., through inventive use of Hoosier canvas tarpaulins.

The prime contractor on the job, the Gilbane Building Co., of Providence, R. I., used 350 Hoosier canvas tarpaulins as a mammoth canvas cover to speed the curing of huge post-tensioned concrete beams and girders.

Hot air was blown into the enclosure formed by the king-size—20x20-foot, 12-ounce weight—tarps, giving a uniform and positive method of insuring that the concrete would cure properly. This was done for seven days on each newly-poured unit. Bad weather which struck during this phase of the construction had no adverse effect on the operation.

The success of this technique demonstrates that one of the major problems in construction of large post-tensioned concrete buildings can be solved, if proper techniques and precautions are followed. The IBM plant construction involved the pouring of more than 20,000 cubic yards of concrete for the prestressed concrete members.

According to Gilbane officials, Hoosier tarpaulins were selected on the basis of absolute dependability and the durability to last through several construction jobs.

Hoosier made delivery the same day the order was received.

For further information about Hoosier tarpaulins, write to the Hoosier Tarpaulin & Canvas Goods Co., Dept. C&E, 1302 Washington St., Indianapolis, Ind., or use the Request Card at page 18. Circle No. 168.

New bituminous mixer produces 15 tons per hour

Its Turbo-Mixer No. 15, said to produce up to 15 tons of asphaltic concrete per hour, is offered by the Asphalt Equipment Co., Inc.,

The mixer consists of an aggregate bin with a reciprocating feeder for

proportioning aggregates, and a positive displacement pump to supply the asphalt. It has a three-compartment, three-shaft pugmill mixer and heating unit with a total of 18 feet of travel. Aggregates and asphalts are

MEASURING is fast, easy

When you use a Rolatape Measuring Wheel

Cut your estimating and layout time in half by using the ROLATAPE Model 400 Measuring Wheel. ONE MAN can measure accurately at normal walking speed . . . and the total measurement is recorded automatically in full view of the operator. And you can measure with complete confidence, since accuracy is assured by its scientifically calibrated counting mechanism. Construction men all over the country are turning to ROLATAPE for speed, convenience and efficiency in their measuring work. . . . Why not see for yourself?

See your nearest ROLATAPE dealer or drop us a line and we'll send you complete information on how ROLATAPE can simplify your measuring.

1741 14th Street Santa Monica, California Rolatape, Inc.



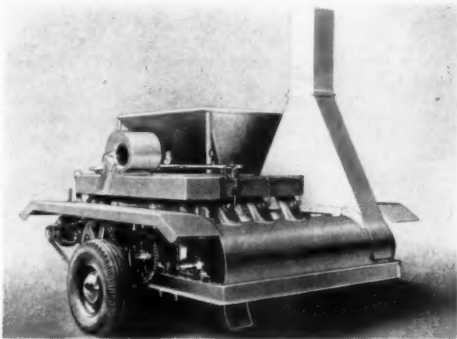
At last you can measure without stooping, squatting or stretching. ROLATAPE lets you measure from a normal walking position.

For more facts, use Request Card at page 18 and circle No. 382

CONTRACTORS AND ENGINEERS

Product Parade

Designed for medium and small jobs, including patching and repaving, the Turbo-Mixer No. 15 produces 12 to 15 tons of asphaltic concrete per hour. It can be electric, gas, or diesel powered.



lifted and turned by 36 mixing paddles in the presence of the heating gases, directed into the mixing compartments by atomizing nozzles.

The Turbo-Mixer No. 15 can work with regular asphalt cements, cutbacks, or emulsions. It can be electric, gas or diesel powered. With controls centralized and easily reached, it is

possible to keep manpower requirements to a minimum, the manufacturer reports.

For further information write to the Asphalt Equipment Co., Inc., Dept. C&E, 3314 Cherry Lane, Fort Wayne, Ind., or use the Request Card that is bound in at page 18 of this issue. Circle No. 143.

Announce three additions to air clutch line



New 8, 10 and 11½-inch size air clutches, as additions to the PO air clutch line, are announced by the Twin Disc Clutch Co.

The new models are said to be ideally suited for machinery and equipment where high torque capacity and long life are requirements. The clutches are available in triple-plate, double-plate, and single-plate construction, and have a maximum torque capacity of 3,503 pound-feet.

Said to provide constant torque capacity without adjustment, the new clutches are compact and have narrow widths that permit their replacing drum or band clutches. They are suitable for air systems up to 130 psi. and are adaptable wherever the convenience of remote air control is desired.

For further information, write to the Twin Disc Clutch Co., Dept. C&E, Racine, Wis., or use the Request Card at page 18. Circle No. 87.

POWER-PACK BACKFILLER



Patent No. 2,779,508

Speeds Road Building . . . Cuts Costs

The quick, economical method of spreading road shoulder material. Also backfills curbs and trenches. Contractors and highway departments all over the country are saving time, labor and material with the Power-Pack Hopper Conveyor. Plan with Power-Pack on your next road contract. Keep down backfilling costs and finish the job quicker. Write for full information today.

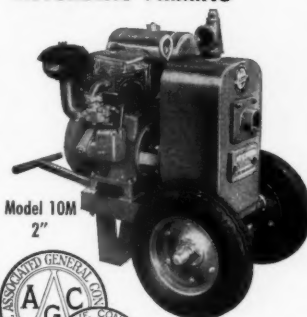


POWER-PACK CONVEYOR CO.
13910 ASPINWALL AVE. CLEVELAND 10, OHIO

For more facts, use Request Card at page 18 and circle No. 383

OCTOBER, 1957

Fast, Positive, Built-in AUTOMATIC PRIMING



Model 10M
2"



WRITE TODAY
for name of your
nearest distributor.
GET FULL DETAILS!

depend on dependable
McGOWAN
LIGHT and **Pumps**
HEAVY-DUTY

COMPLETE CAPACITY RANGE TO HANDLE EVERY JOB

- Plumbing
- Waterworks
- Road Building
- Street Repairs
- Public Utilities
- Dredging, etc.
- Diversion of Waterflow

McGowan pumps are engineered to satisfy every need in the field, efficiently, simply, economically. Improved open-type impeller . . . close manufacturing tolerances . . . assure minimum maintenance.

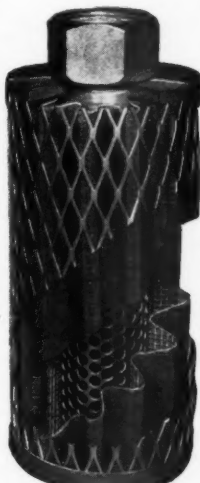
McGOWAN PUMPS Dependable Pumps Since 1852

DIVISION of LEYMAN MANUFACTURING CORP., 58 Central Ave., Cincinnati 2, Ohio

For more facts, use Request Card at page 18 and circle No. 384

FOR DEPENDABLE PROTECTION on Construction Industry's Hydraulic Equipment

MARVEL SYNCLINAL FILTERS



SUMP TYPE
(cutaway)

Hydraulic Oils MUST BE CLEAN
to Protect Equipment—
Increase Production—
Reduce Maintenance

CONSTRUCTION ENGINEERS and MAINTENANCE MEN, whose job it is to keep machinery operating at peak efficiency, are specifying Marvel Synclinal Filters on new equipment and standardizing with Marvels on existing equipment.

It's The ACTIVE Filtering Area That Counts!

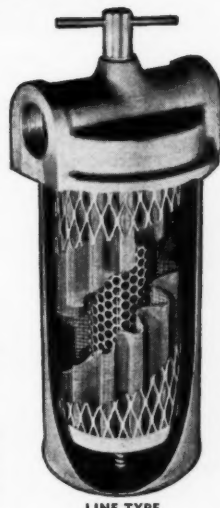
The Synclinal design of Marvel Filters provides that all-important balance between maximum ACTIVE filtering area and sufficient storage capacity for filtered out particles. Thus, longer periods of productive operation are attained before filter cleaning is necessary. Marvel Synclinal Filters are easy to clean because both the sump and line type may be disassembled, thoroughly cleaned and reassembled in a matter of minutes. Line type operates in any position and may be serviced without disturbing pipe connections.

A SIZE FOR EVERY NEED

Available for sump or line installation in capacities from 5 to 100 G.P.M. Greater capacities may be attained by multiple installation (as described in catalog). Choice of mesh sizes range from coarse 30 to fine 200.

IMMEDIATE DELIVERY!

As in the past, Marvel continues to offer IMMEDIATE DELIVERY.



LINE TYPE
(cutaway)

FILTERS FOR FIRE-RESISTANT HYDRAULIC FLUIDS

Marvel's most recent development is a filter for the efficient filtration of all types of Fire-resistant hydraulic fluids.

WATER FILTERS

Both sump and line type filters have been adapted for use in all water filtering applications. No changes have been made in the basic, balanced synclinal design.

MARVEL ENGINEERING CO.

7227 N. HAMLIN AVE., CHICAGO 45, ILL.

PHONE: JU niper 8-6023

Without obligation, please send me complete data on Marvel Synclinal Filters, as indicated—

- ☐ Catalog #108—For Hydraulic Oils, Coolants, Lubricants.
- ☐ Catalog #200—For Fire-resistant Hydraulic Fluids (Aquosol Base)
- ☐ Catalog #400—For Fire-resistant Hydraulic Fluids (Synthetic)
- ☐ Catalog #301—For Water. (CE-10)

Name _____
Company _____
Address _____
City _____
State _____

Catalogs
containing
complete data
available
on request

For more facts, use coupon.



Fast starting in cold-weather operation is one of the advantages claimed for this Smith compressor. The unit is equipped with a 12-volt electrical system and a positive shift starter for starting ease in low-temperature weather. For further information write to Gordon Smith & Co., Inc., Dept. C&E, 483 College St., Bowling Green, Ky., or use the Request Card at page 18. Circle No. 90.

New line of accumulators for hydraulic service

A new line of piston-type accumulators for hydraulic service, featuring important improvements over previous models, is announced by the Parker Appliance Co.

On the piston is a new design v-ring of synthetic rubber said to provide long seal life and trouble-free sealing. The line includes 14 models ranging in oil capacity from 10 cubic inches to 10 gallons.

All models are furnished with SAE straight thread connection ports; adapters for other style connections are available.

For further information write to the Industrial Hydraulics Div., Parker Appliance Co., Dept. C&E, 17325 Euclid Ave., Cleveland 12, Ohio, or use the Request Card at page 18. Circle No. 6.

New IPG salamander has three burners

Its Model SLP salamander, one of a new line of IPG salamanders, is announced by Wemco Products.

According to the manufacturer, the new unit has triple burners for more complete combustion of the gas.

The Model SLP is equipped with a 10-inch cast iron deflector and a safety shut-off.

For further information write to Wemco Products, Dept. C&E, 53 E. Ten Mile Road, Madison Heights, Mich., or use the Request Card at page 18. Circle No. 152.



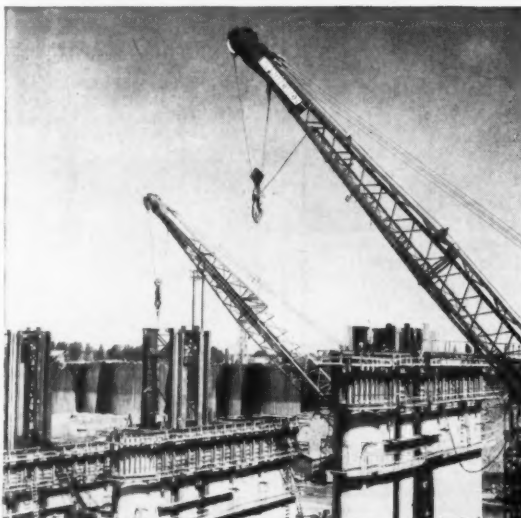
1 **MR. WIRE ROPE**—Ed Carey (right), Tiger Brand Wire Rope sales representative, is known as "Mr. Wire Rope" on the St. Lawrence Seaway & Power Project. Ed is checking sheave grooves on a walking dragline with Mr. Mel Poeschl, Equipment Superintendent for Waddington Constructors, combine composed of Kiewit, Morrison-Knudsen.



2 **GRASSE RIVER LOCK**, St. Lawrence Seaway. Gantry crigged with 7/8" 6x19 Tiger Brand Hoist Ropes are pouring total of 376,000 cu. yds. of concrete. This lock is one of which will provide for raising and lowering vessels to and the lake created by the Barnhart power dam and the Sault spillway dam. General Contractors: Joint venture tween Perini, Walsh, Kiewit, Morrison-Knudsen and U

Wire rope makes things hum on thst.

5 **IROQUOIS DAM**, New York State Power Project. Located 25 miles upstream from Long Sault Dam. This dam is to control and regulate the outflow from Lake Ontario. Cranes are equipped with 1 1/2" 18x7 Tiger Brand Non-rotating Hoist Rope. General Contractors: Joint venture between Kiewit, Johnson, Johnson.



6 **LONG SAULT CANAL**, mainland portion, St. Lawrence Seaway. Monighan dragline with 13-cu.-yd. bucket equipped through with Tiger Brand Wire Rope. The drag rope is 2 1/4" 6x19 Extra Monitor Lang Lay IWRC. This job involves digging 12,000 cu. yds. of heavy marine clay and cemented glacial till, two of most tricky and unpredictable materials you can find. General Contractors: Joint venture between Kiewit, Morrison-Knudsen





Sixteen cubic feet of snow is dumped by this Ford industrial loader. Because of the loader's long reach, truck sides as high as 8 feet can be cleared with ease. For further information write to the Tractor & Implement Div., Ford Motor Co., Dept. C&E, 2500 E. Maple Road, Birmingham, Mich., or use the Request Card at page 18. Circle No. 89.

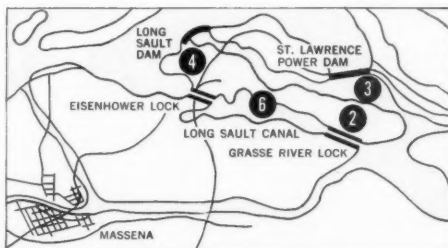
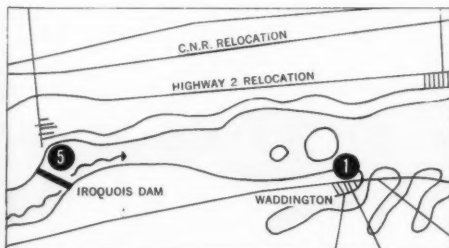


ST. LAWRENCE POWER DAM, New York State Power Project. Photo shows U. S. Section. Combined Canadian and American power houses will produce 1,880,000 kilowatts, half to each nation. Whirly cranes erecting forms and pouring concrete are rigged with Tiger Brand $\frac{3}{4}$ " 6x19 Hoist Rope Excellay Monitor IWRC. General Contractors: Joint venture between Perini, Walsh, Morrison-Knudsen, Kiewit, Utah.



4 LONG SAULT SPILLWAY DAM, FIRST SECTION, New York State Power Project. This dam controls the flow of water into the power pool and thence to the power dam. At present all of the St. Lawrence flows through this section. General Contractors: Joint venture between Walsh, Perini, Morrison-Knudsen, Kiewit, Utah.

St. Lawrence Seaway and Power Projects



This is the big year on the St. Lawrence Seaway and Power Projects. Contractors are rushing to complete their jobs on time. Everywhere you look, big shovels and draglines are digging 24 hours a day. Huge gantry cranes are setting forms and pouring concrete. The St. Lawrence River has been moved so many times it doesn't know its own bed.

All this adds up to a situation that demands the most from machines and wire rope. . . and most of the wire rope on the American jobs is Tiger Brand.

Contractors wanted quality wire rope in a hurry. So, American Steel & Wire set up a warehouse in

nearby Massena. They staffed it with competent men who brought in a complete stock of Tiger Brand Wire Rope in all types and sizes. Thus, the best rope obtainable could be delivered to the job sites in a matter of hours. The illustrations show a few of the locations where Tiger Brand Wire Rope is hard at work.

AMERICAN STEEL & WIRE DIVISION
United States Steel, General Offices: Cleveland, Ohio
Columbia-Geneva Steel Division, San Francisco
Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors
United States Steel Export Company, New York

USS AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed



UNITED STATES STEEL

For more facts, use Request Card at page 18 and circle No. 386



Announce tire spreaders for big rig rubber

Its new line of tire spreaders capable of handling sizes up to and including 37.5x33 is announced by the Salsbury Corp.

Available in four models, the new spreaders feature operation from a standard air line, a roll-up ramp to eliminate tire lifting, bench mounting, and complete portability.

Both regular and tubeless tires may be handled.

For further information write to the Salsbury Corp., Dept. C&E, 1161 E. Florence Ave., Los Angeles 1, Calif., or use the Request Card at page 18. Circle No. 164.

Equipment financing in winter months

A winter work financing plan for contractors' equipment is offered by Walter E. Heller & Co. According to the firm, the plan is designed to help contractors avoid unrealistic repayment obligations during the off-season and reduce the need for renegotiating terms on equipment leases.

The main feature of the plan is that during December, January, and February, payment is one-tenth the amount of payment for each of the other months of the year.

For further information write to Walter E. Heller & Co., Dept. C&E, Bankers Building, 105 W. Adams St., Chicago 90, Ill., or use the Request Card at page 18. Circle No. 50.



Shown breaking through deep snow in Clear Creek County, Colo., is the Austin-Western Super 88 power grader with 6-wheel-drive and steer, equipped with a giant V-plow and snow wing. The 3,500-pound plow cuts a 10-foot swath, and has an overall height of over 7 feet. With a live front end, which puts driving power immediately behind the V-plow, all load pressures are applied directly to the nose of the plow, thus eliminating strain on front axles and steering mechanism. The snow wing is mounted at the rear of the grader and operates independent of the plow and grader blade. For further information about this grader and its snow-removal attachments, write to the **Austin-Western Works, Baldwin-Lima-Hamilton Corp.**, Dept. C&E, Aurora, Ill., or use the Request Card at page 18. Circle No. 123.



Grousers: available in regular, semi, or flat types; all standard widths

WHY Kensington track LASTS SO LONG

There are two reasons why these tracks give you longer service, even under severest working conditions: (1) KENSINGTON's new, improved design, and (2) superior, wear-resisting alloyed manganese steel.

New Design. Rigidity and near-perfect alignment are made possible by one-piece rail design and special heat-treated alloy pins pressed tightly in place under high pressure. Anti-shear lugs on grouser plate fit snugly over tie bar of link to eliminate loose plates, elongated bolt holes, twisting, weaving, and side-sway... the most common causes of bolt loosening and track trouble. Grousers are heaved-up at all critical points to better resist bending and breaking.

Yet, despite all these improvements, KENSINGTON Track Assemblies fit all standard, popular make crawler tractors.

Steel with Stamina. Special, hard, tough, KENSINGTON-developed alloyed manganese steels actually fight back against wear! They constantly develop extra surface hardness when exposed to friction, abrasion, and impact.

KENSINGTON tracks come from the factory ready-assembled, easy to install.

Discover for yourself how much KENSINGTON tracks will lower your maintenance costs and improve your operating efficiency. Coupon will bring details.



DIVISION OF POOR & CO., CHICAGO

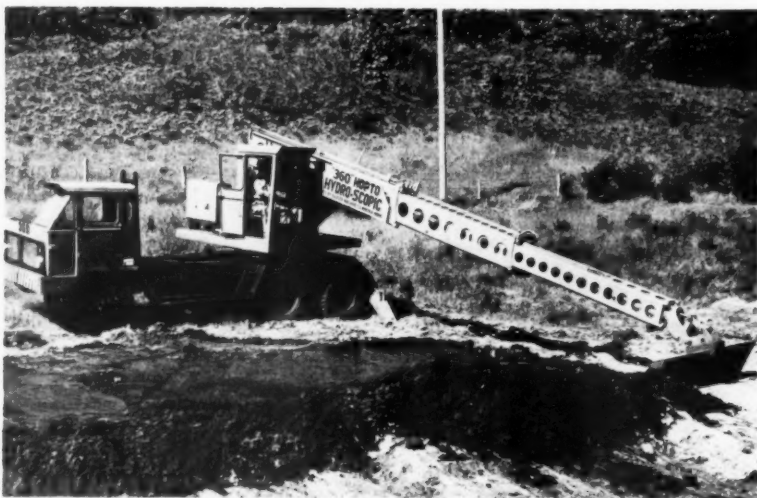
KENSINGTON STEEL

Dept. A, 505 Kensington Ave., Chicago 28, Ill.

• Please send information on crawler tracks for tractor described below. I understand I will be under no obligation.

Make of tractor	No. tracks per belt
Model	
Width of grouser	
NAME	
COMPANY	
ADDRESS	
CITY	ZONE
STATE	

For more facts, use coupon or circle No. 387



Featuring a full 360-degree swing, a 100-degree bucket rotating mechanism, a surface reach of 35½ feet, as well as the ability to excavate within one foot of the carrier, is this new Model 360 Hydro-Scopic Hopto available from the Badger Machine Co. The Model 360 is also equipped with the firm's Snap-On tool adapter, said to allow buckets and tools to be changed in a matter of seconds. For further information about the Model 360 write to the **Badger Machine Co.**, Dept. C&E, 1122 W. Fifth St., Winona, Minn., or use the Request Card at page 18. Circle No. 96.

INGRAM

rollers

TANDEM
and

3 WHEEL

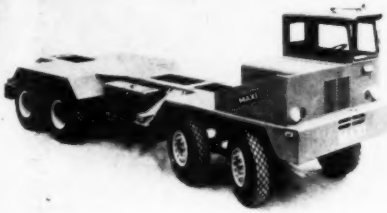
ROLLERS
AVAILABLE IN ALL SIZES



Acme IRON WORKS
P.O. BOX 2020 • SAN ANTONIO 6, TEXAS

For more facts, use Request Card at page 18 and circle No. 388

CONTRACTORS AND ENGINEERS



The new Maxi 35-ton truck crane carrier is available in two models. Powered by either gasoline or diesel engine, it has a range of 12 forward and 3 reverse speeds, with a top speed of 38.8 mph.

New truck crane carrier features improved design

A new 35-ton truck crane carrier is announced by The Maxi Corp. Two models are available, the T-84-F (8x4 drive) and T-64-F (6x4 drive).

Design features include: welded high-strength, alloy steel frame; removable outriggers with slide-type

extensions both rear and midship; air assist on clutch; power steering; tow hooks front and rear; and an extra large removable panel inside the cab for better accessibility to the left side of the engine.

Maxibrake attachments are an added safety feature, providing an automatic spring-actuated, mechanical application of brakes when the air supply is depleted through extreme use or other causes.

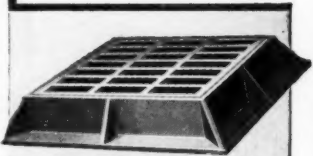
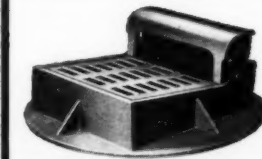
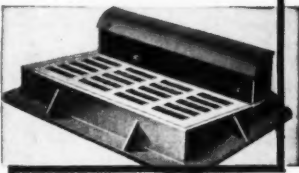
The trucks are available with either the Waukesha Model 145 GKB, a 6-cylinder 207-hp gasoline engine, or the Cummins NHBI-600, a 6-cylinder diesel engine. Main and auxiliary transmission provide a total of 12 forward speeds and 3 reverse speeds, with a top speed of 38.8 mph, and low speed of 1.7 mph.

The total weight of the unit is 39,300 pounds. It has a 16-foot 6-inch wheel base (center to center of tandems), an overall length of 28 feet 3 inches, and an overall width of 10 feet 3 inches.

For further information write to The Maxi Corp., Dept. C&E, P. O. Terminal Box 3129, Los Angeles 54, Calif., or use the Request Card at page 18. Circle No. 61.

For more facts on these products, circle the indicated number on the Request Card at page 18.

Neenah FOUNDRY COMPANY construction castings of sound quality...solid value



Patterns for 15,000 different Gray Iron Castings for
• Highway • Building • Communication
• Utilities • Industrial • Public Works
• Airport • Municipal • Transportation

Write for our 135-page
Catalogue "R," Second Edition

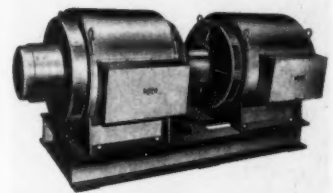
Neenah
FOUNDRY COMPANY
NEENAH, WISCONSIN CHICAGO OFFICE
5445 North Nava Ave.
Chicago 31, Illinois

For more facts, circle No. 389

Offer new high voltage motors, generators

A new series of both high voltage motors and high voltage generators is announced by the Kato Engineering Co. Motors are available as large as 200 horsepower, 4,160 volts at 1,200 rpm. Generators are available as large as 300 kilowatts, 4,160 volts at 1,200 rpm.

Alternators are available in either two-bearing, single unit construction, or can be built in single or two-bearing close coupled design for adaption to commercial engines. A complete line of flexible couplings and bell housing adaptors which enables these alternators to be attached to any appropriate engine with standard SAE

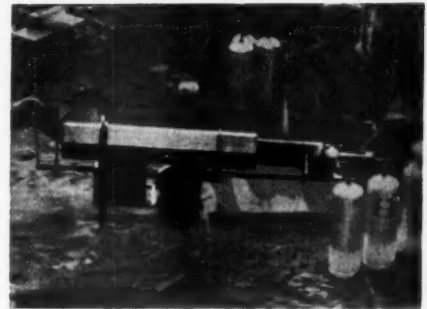


bell housing is available from the company.

For further information write to the Kato Engineering Co., Dept. C&E, 1415 First Ave., Mankato, Minn., or use the Request Card at page 18. Circle No. 131.

if you need a **GOOD DRYER**

see the TARCO "Flash-Flame" DRYER



CONVENIENT: Dries your sand, stone, gravel, or whatever right when and where you need it . . . right on the job site. Screens it, too.

MOBILE: Light enough to be moved by two men and carried in a pick-up. Yet more than rugged enough for any job.

FAST: You can set up and start a "Flash-Flame" Dryer in less than 15 minutes. Gasoline engine or electric motor drive. Fast acting clutch. Kerosene or L. P. bottle gas fired.

RELIABLE: Simple to operate. Easy to service. Requires little storage space. Most inexpensive to own and use.

TARRANT Manufacturing Company
31 Jumel St., Saratoga Springs, N. Y.

For more facts, use Request Card at page 18 and circle No. 390



VULCAN TOOLS are sold by distributors throughout the United States and Canada.



VULCAN TOOL MANUFACTURING COMPANY
41 LIBERTY STREET, QUINCY 69, MASSACHUSETTS

Specialists in the Design and Production of Pneumatic Tool Accessories

For more facts, use Request Card at page 18 and circle No. 391

Super Service PAVEMENT BREAKING TOOLS QUALITY TOOLS GIVING BETTER SERVICE AT LESS COST WITH THESE ADVANTAGES:

Exceptional Durability — fully heat treated for maximum strength and freedom from premature breakage.

Unusual Strength — making use of the full power of modern hammers.

Unexcelled Performance — longer wearing, requiring less frequent resharpening.

Time-Tested — for over 25 years.

Liberal Guaranteed.

Specify **VULCAN** for:

PAVEMENT BREAKING
TOOLS
CLAY DIGGING
TOOLS

DRILL STEELS
PNEUMATIC HAMMER
TOOLS

ELECTRIC HAMMER
TOOLS
HAND TOOLS FOR
CONCRETE, STONE,
AND STEEL WORKERS



An inside-mounted bulldozer for use with the Caterpillar D9 tractor is available from Balderson, Inc. Said to be efficient for loading scrapers as well as for heavy-duty bulldozing, the straight-blade unit has a cutting width of 10 feet 2 inches; the blade is 3/4-inch thick, with a 3/4-inch push plate reinforcement on the back. For further information on this bulldozer, write to Balderson, Inc., Dept. C&E, Wamego, Kans., or use the Request Card at page 18. Circle No. 149.

HOW TO HANDLE WET JOBS

ONE LIFT REMOVES 18 FT OF WATER FROM "PATCH-QUILT" SOIL

Sewage treatment plant, Clayton, N. J.
Contractor: C & T Affiliates, Inc.



SOIL on this job varied by area—fine silty sand here—coarse sand there—gravel a few feet away. This "patch-quilt" pattern precluded routine handling.

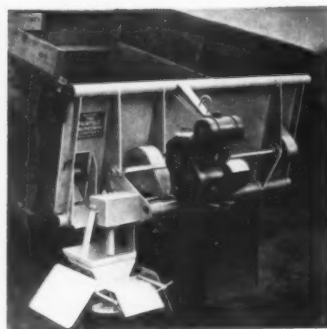


GRIFFIN engineers carefully planned proper installation for each wellpoint, using sand filters on some but not others.

This plus other special methods lowered the 18 ft of water with a money-saving single-stage wellpoint system. Top photo shows system placed directly at water level.

GRIFFIN
WELLPOINT CORP.
881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.
In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax
For more facts, circle No. 392

Material-spreading unit covers two-lane width



This spreading unit, available from The Fairfield Engineering Co., will spread salt, sand, or cinders over two highway lanes and can also throw the material forward for better traction.

A material spreader for salt, sand, and cinders is available from The Fairfield Engineering Co.

Said to fit any standard 3-cubic-yard dump body tail gate, the spreader is available with a 4 1/2-inch

screw for chemicals and salt or a 9 1/2-inch screw for sand and cinders. The unit is powered by a 4-hp air-cooled engine with a centrifugal clutch controlled from the truck cab.

The metering screws run and discharge material at a predetermined rate. Variations in application rate are made by changing either the spreader engine speed or the speed of the truck. Controls are located in the truck cab within easy reach of the operator.

Adjustable baffles at the distributor disk control the width of spread. The unit will spread material over two highway lanes and can also throw the material forward for better traction. Spot applications can be made by use of a start-stop control valve in the truck cab.

For further information write to The Fairfield Engineering Co., Dept. C&E, 324 Barnhart St., Marion, Ohio or use the Request Card at page 18. Circle No. 67.



For "cold weather" starting of all types internal combustion engines, diesel, tractor fuel and gasoline.

Warranted

To be non-injurious to any type of engine when used in accordance with instructions.

Blended and packed by
LEWIS DIESEL ENGINE CO.
P.O. Box 2828 DeSoto Station
92 WEST CAROLINA ST.
MEMPHIS 2, TENNESSEE

For more facts, circle No. 393



High Pile Discharge

Full 60° Dumping Angle

Rugged Stability

OMAHA STANDARD

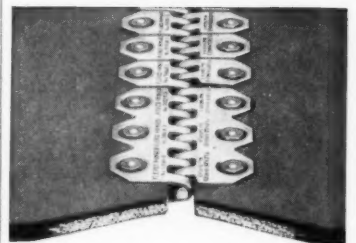
END DUMP TRAILER

Accurate load distribution. Made in all sizes. Write for details.

Distributorships available in some areas.
"Custom-Made Material Trailers—for ANY Commodity"
OMAHA STANDARD
2401 W. Broadway, Co. Bluffs, Ia.

For more facts, circle No. 394

NEW...



500X FLEXCO HINGED BELT FASTENERS

for ditching, trenching, grading and other earth moving equipment

- ★ Make smoother joints
- ★ New Nylon covered cable pin
- ★ No pin migration
- ★ Complete packaged joints



Standardize on
FLEXCO 500X Fasteners

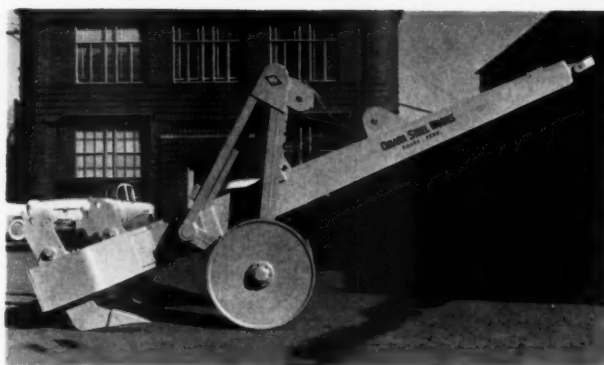
- ★ Packaged joints—complete, convenient, no waste.
- ★ New Power Tools cut application time.
- ★ Stocked by leading distributors.
- ★ Field engineers are ready to assist you.

(Fasteners also available in bulk—nylon covered cable pin stock in 100 ft. and 200 ft. rolls.)
Ask for Bulletin No. 500X
See Your FLEXCO Distributor
FLEXIBLE STEEL LACING CO.
4607 Lexington Street • Chicago 44, Illinois

FLEXCO *Hinged*
500X Belt Fasteners

For more facts, circle No. 395
CONTRACTORS AND ENGINEERS

This mechanical tow-type ripper is available in two sizes for use with Caterpillar D7, D8, and D9 tractors. The Model 18 penetrates to 28 inches, and the Model 28 rips to 30 inches. Teeth tips are replaceable and are made of heat-treated alloy steel forgings. For further information write to the Omaha Steel Works, Dept. C&E, 609 S. 48th St., Omaha, Nebr., or use the Request Card at page 18. Circle No. 144.



Combination sandblaster, traffic line remover

Its Model TL-200 combination traffic line remover and portable sandblaster is available from Cyclone Sandblast Equipment.

Designed with the aid of state highway engineers, the TL-200 is said to remove traffic lines from concrete or black top, on smooth or ir-



regular surfaces, easily and without damage. It is also recommended for cleaning equipment prior to repainting.

According to the manufacturer, this unit requires no special skills or knowledge for efficient operation, and is sturdily built to render continuous service at an extremely low cost.

For further information write to Cyclone Sandblast Equipment, Dept. C&E, 42 Clara St., San Francisco 7, Calif., or use the Request Card at page 18. Circle No. 104.

New portable heater

A new portable heater is announced by the Master Vibrator Co. Designated Model B-250, the unit works effectively indoors or out, according to the manufacturer.

The heater, which produces 250,000 Btu of forced warm air per hour, plugs into a regular 115-volt ac outlet. It reportedly will operate for a minimum of 16 hours on a tank of kerosene or fuel oil, and has a thermostat for automatic operation.

For further information write to the Master Vibrator Co., Dept. C&E, 1752 Stanley Ave., Dayton 1, Ohio, or use the Request Card at page 18. Circle No. 142.

PETER KIEWIT SONS' CO. produces:

Aggregate and mineral filler for bituminous surface course

In one arrangement of Cedarapids Units, large size pit material is initially crushed by a 2540 Portable Primary Jaw Crusher and further reduced by an 1836 Primary Jaw. Material then goes through an Intermediate Roll Crusher Scalping Unit and finally a Roll Crusher Secondary Plant. With this efficient combination of Cedarapids units, Kiewit produces minus $\frac{3}{4}$ " fine aggregate containing rock dust mineral filler, and $\frac{3}{4}$ " surface course aggregate.

Three sizes of aggregate for concrete and binder course

In a different combination of units, the same Cedarapids Unitized Plant produces $1\frac{1}{2}$ " concrete aggregate, $\frac{3}{4}$ " concrete aggregate, $1\frac{1}{2}$ " hot-mix binder course aggregate.

Washed aggregate

From stockpile and double log washer, a Cedarapids 24" x 50' Conveyor delivers aggregate to a Cedarapids 4' x 12' triple-deck Horizontal Vibrating Screen installed over the loading bin and equipped with spray bars for final washing.



Kiewit bids in practically any state or country and can be sure of finding the right combination of Cedarapids units for each job. Units in Kiewit's Unitized Plant at Minot, N. D. can be arranged in a wide variety of combination without major changes in the individual units.

Different combinations of
**ONE VERSATILE
CEDARAPIDS
UNITIZED PLANT**
supply many sizes of concrete and hot-mix
aggregates for Minot Air Force Base



IOWA MANUFACTURING COMPANY Cedar Rapids, Iowa, U. S. A.

The flexibility of this Cedarapids Unitized Plant, and the contractor's ingenuity in varying the unit combinations to meet specifications for both concrete and hot-mix aggregate, assure maximum efficiency at low production cost.

There's a combination of Cedarapids crushing, screening, scalping and washing units that will solve your problem by producing almost any quantity, any specification, and meet practically any production condition. And remember, 100% portability lets you take them where the best contracts are. Ask your Cedarapids distributor to explain Unitized operation and show you how you'll profit.



An optional hydraulic drive system for its portable crushing and conveying units for pit and quarry use is announced by the Lippmann Engineering Works, Inc. Smoother and more simple in application, the drive is said to lessen noise, vibration, and maintenance, while improving power transmission with a steadier, more level fluid application of horsepower. The drive is also applicable to stationary installations. For further information write to the Lippmann Engineering Works, Inc., Dept. C&E, 4603 W. Mitchell St., Milwaukee 14, Wis., or use the Request Card at page 18. Circle No. 11.

POSEY LARGE O.D. PIPE

Posey specializes in the fabrication of large O.D. pipe for high pressure, high temperature service in water lines, sewage outfall lines and similar applications . . . with facilities for producing pipe and piling from 20" diameter and larger . . . economically and on time. Write for specifications and prices without obligation. Your request will receive immediate attention.

CARBON STEEL • STAINLESS STEEL • NICKEL CLAD
STAINLESS CLAD • MONEL CLAD • WROUGHT IRON



ELEVATED TANKS • HORIZONTAL TANKS
STACKS • PRESSURE VESSELS • DIGESTERS
CARBON AND ALLOY STEEL PLATE FABRICATION
DREDGE PIPE AND ACCESSORIES

POSEY IRON WORKS, INC.

Steel Plate Division Lancaster, Penna.
New York Office: Graybar Building Established 1910

For more facts, use Request Card at page 18 and circle No. 397

Little Giant front-mounted sweepers can be used independently to remove light, freshly fallen snow. Brush rotation on these units is constant.



Front-mounted sweepers handle snow removal

Its Models FM-C, SP-C and EL-C front-mounted sweepers are available from Little Giant Products, Inc.

Brush rotation on these units is constant due to an independent Wisconsin 7-hp or 14-hp engine as standard equipment.

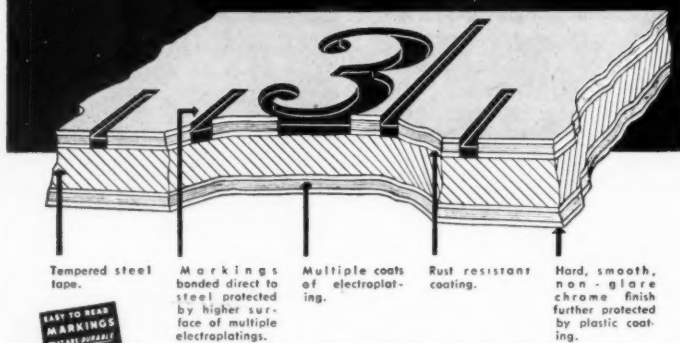
The sweeper follows behind the snowplow or grader removing the thin layer of snow left by the blade,

or can be used independently to remove light, freshly fallen snow.

Brush lengths are available in 6, 7, or 8 feet, and the core can be filled with Palmyra fiber or spring steel.

For further information write to Little Giant Products, Inc., Dept. C&E, 1530-50 N. Adams St., Peoria Ill., or use the Request Card at page 18. Circle No. 167.

WHY LUFKIN CHROME CLAD TAPES last longer



Tempered steel tape.

Markings banded direct to steel protected by higher surface of multiple electroplatings.

Multiple coats of electroplating.

Rust resistant coating.

Hard, smooth, non-glare chrome finish further protected by plastic coating.



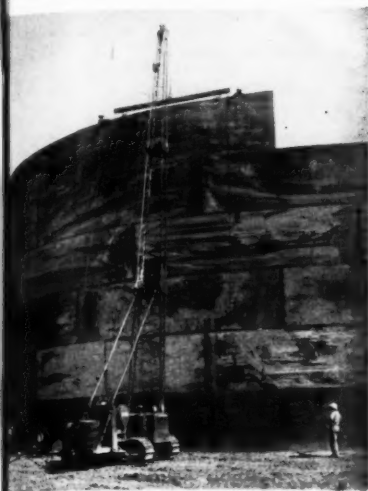
Chrome Clad tape lines, a Lufkin exclusive, won't crack, chip or peel and are rust and corrosion resistant. Their jet black markings are easy to read and won't wear off. For longer wear try the Chrome Clad Leader — an example of a superior Lufkin tape with an "All-Metal" line. Has rust-resistant steel case covered with handsome vinyl. Replaceable lines. 25, 50, 75 and 100 ft. lengths.

BUY LUFKIN TAPES • RULES
PRECISION TOOLS
FROM YOUR SUPPLY STORE

THE LUFKIN RULE CO., Saginaw, Michigan

For more facts, use Request Card at page 18 and circle No. 398

CONTRACTORS AND ENGINEERS



This crawler-mounted erection boom, for use with the International Harvester TD-14-142 tractor series, is reported to provide a relatively low cost construction unit capable of performing a wide range of jobs. Designated the EB-142, with 3,000 pounds of counterweights the unit will handle a 60-foot boom (three sections), and can lift up to 14,000 pounds with an overhang of 8 feet from the rail. Winch mounting permits raising or lowering the boom while the tractor is in motion. For further information about this erection boom, write to the **Superior Equipment Co.**, Dept. C&E, Box 30, Bucyrus, Ohio, or use the Request Card at page 18. Circle No. 59.

Railroad car shaker unloads bulk materials

A car shaker for the vibratory unloading of railroad cars is offered by the National Conveyor & Supply Co. According to the manufacturer, one man normally can complete the entire unloading operation without going into or under the car.

The shaker is hooked over the side of the car and clamped by a tension screw which hooks on the under-frame of the car. It is not necessary to remount the shaker to unload other hoppers of the car.

The three basic types of installation are the jib crane, wheel cart, or monorail method.

This National car shaker is said to be especially effective in unloading frozen materials.

For further information write to the National Conveyor & Supply Co., Dept. C&E, 350 N. Harding Ave., Chicago 24, Ill., or use the Request Card at page 18. Circle No. 169.



With this National car shaker, one man normally can complete the entire unloading operation without going into or under the car. The unit is especially effective in unloading frozen materials.

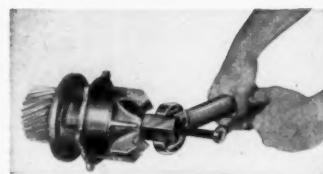
To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.

For more facts, circle No. 399→

Water pump impeller remover for engines

A new tool designed to remove water pump impellers from their shafts on various Allis-Chalmers engines is announced by the Owatonna Tool Co.

Designated the AC-20, the tool simply threads on the impeller hub, with the forcing screw bearing against the impeller shaft. By turning the forcing screw and holding the large hub collar, the impeller is removed with little effort, eliminating the danger of parts damage, the manufacturer states.



For further information write to the Owatonna Tool Co., Dept. C&E, 381 Cedar St., Owatonna, Minn., or use the Request Card at page 18. Circle No. 136.



Ideal for close quarters... the Le Roi 31 clay spade

Getting into a tight spot with the smooth, well-balanced Le Roi 31 clay spade is a pleasure. It has clean, compact lines for faster digging in cramped quarters — handles easily in any position without tiring the operator. The 31 weighs less than 20 lbs. complete but packs the power of much heavier units. Its one-piece buffer speeds steel changes — keeps dirt out. Other features include precision honing for low air consumption and built-in full-shift lubrication for all moving parts.

Make it a point to see and try the low-cost, high-production 31 at your Le Roi distributor. Or write Le Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wisconsin.

LE ROI NEWMATIC AIR TOOLS



PORTABLE AND TRACTAIR® AIR COMPRESSORS • STATIONARY AIR COMPRESSORS • AIR TOOLS



This snow loader's engine independently powers a high-speed propeller to handle any type of snow and ice that the blade can handle. A Rivinius unit, it loads directly into the truck from the motor grader's moldboard; no windrowing is necessary. For further information about this snow loader, write to Rivinius, Inc., Dept. C&E, 406 S. Darst St., Eureka, Ill., or use the Request Card at page 18. Circle No. 140.



Seal Sewer Joints Tighter



PRESSTITE'S KALKTITE®

... meets Federal Specification SS-S-168

Over the past 30 years, the Presstite Sealing System has been thoroughly service-proved by many leading engineers and contractors. They will assure you it's the easiest, most economical way to get strong, tight joints that eliminate practically all ground water infiltration.

PRESSTITE'S 3-STEP SEALING SYSTEM

- PRIMER** Improves bond between pipe and sealing compound.
- ROPAX®** Non-porous, adhesive packing. Compresses to form additional seal impervious to water.
- KALKTITE®** Cold mixed and cold applied. Dense, flexible, asphaltic cement. Sets internally; unaffected by hot, cold, wet or dry conditions.

WRITE for working samples and 20 page catalog.



A Division of AMERICAN-MARIETTA COMPANY
3788 CHOUTEAU AVENUE, ST. LOUIS 10, MISSOURI

For more facts, use Request Card at page 18 and circle No. 400

Winch-elevated platform for masons, materials

A new winch-elevated mason and material platform, or bracket, is announced by the Universal Mfg. Corp.

Designated Ezelift, the bracket is said to permit easy elevating of the work platform through four 6½-foot panel heights without repositioning the hanger. As a result, the mason and his material are said to be always at the proper height for each course of brick or block.

The Ezelift bracket is a rugged, welded lightweight assembly providing a mason platform support adjust-

able from 20 to 30 inches and a similar material platform support with the same adjustment, elevated 20 inches above the mason platform. The recommended load is 1,750 pounds per bracket assembly.

The bracket is said to be easily raised or lowered by a special heavy-duty, manually operated 4,000-pound-capacity winch.

For further information write to the Universal Mfg. Corp., Dept. C&E, 133 North St., Zelienople, Pa., or use the Request Card at page 18. Circle No. 161.



CAL-TIE® WIRE in the handy reel dispenser

... Safe

Tying reinforcing bars with Cal-Tie Wire on the convenient reel dispenser is safer than the old-fashioned shoulder coil. There's no awkward coil to catch on protruding objects...no danger of eye injuries...no scratches on neck and ears...and Cal-Tie's unusually smooth surface makes tying easier.

... Economical

Cal-Tie Wire gives more ties per pound. That's because workers can cut the desired length they need... when they need it...don't have to clip off long, useless wire ends after each tie. They can perform other duties without discarding their partially-used supply of tie wire.

Your nearby CF&I representative will be happy to give you complete details on this safe, economical and modern way to tie rebars, etc. Why not see him soon?

CF&I CAL-TIE WIRE

THE COLORADO FULL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Casper • Denver • El Paso • Ft. Worth • Houston • Lincoln (Neb.) • Oklahoma City • Phoenix • Pueblo • Salt Lake City • Wichita
PACIFIC COAST DIVISION—Los Angeles • Oakland • Portland • San Francisco • Seattle • Spokane
WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia
CF&I OFFICES IN CANADA: Toronto • Montreal • Vancouver • Winnipeg

For more facts, use Request Card at page 18 and circle No. 401

CONTRACTORS AND ENGINEERS



The specially designed trough on this Morgen building conveyor permits a simple conversion from belt to chain-and-flight operation.

Convertible conveyor handles all materials

A building conveyor that is interchangeable from belt to chain-and-flight is announced by the Morgen Mfg. Co.

A specially designed trough permits a simple conversion, permitting a single conveyor to handle all building materials. The solid trough for the chain-and-flight rigging also supports the belt the entire length of its ascent.

Other features of the Morgen conveyor include swivel wheels for parallel and circular movement, a forward-reverse transmission, a stabilizing yoke to resist twisting under off-center

loads, and an improved drive system that requires no adjustment as the conveyor is raised and lowered.

The conveyor is available in 24, 32, or 40-foot lengths. Maximum angle of elevation is 45 degrees. Height of discharge is continuously adjustable.

Flight travel is rated at 120 fpm. As a belt conveyor, it reportedly can move 1/2 yard of concrete per minute with belt travel of 240 fpm.

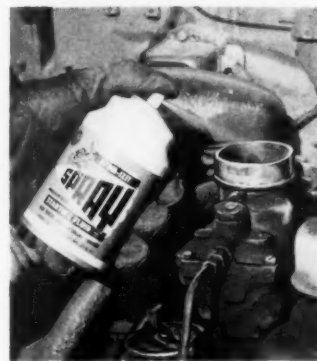
For further information write to the Morgen Mfg. Co., Dept. C&E, 115 N. Broadway, Yankton, S. Dak., or use the Request Card at page 18. Circle No. 132.

Offer starting fluid in pressurized container

Its fluid for use as an aid in starting gasoline and diesel engines in extremely cold or damp weather is offered by the Spray Products Corp.

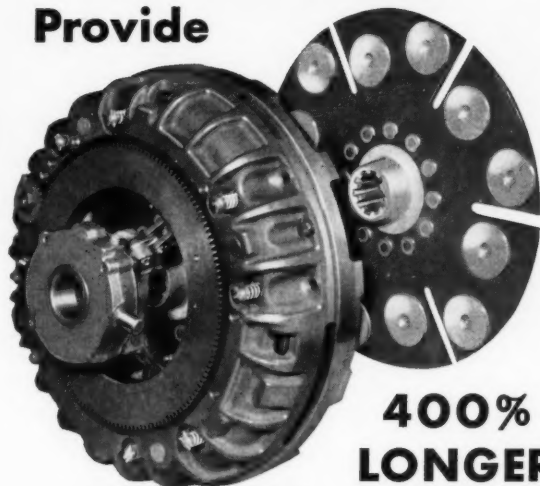
Designated Spray, the fluid is available in a pressurized container said to operate effectively in temperatures as low as 65 degrees below zero. It will reportedly withstand storage temperatures as high as 180 degrees.

For further information write to the Spray Products Corp., Dept. C&E, P. O. Box 584, Camden 1, N. J., or use the Request Card at page 18. Circle No. 153.



ROCKFORD MORLIFE® Over-Center CLUTCHES

Provide



400% LONGER WORK LIFE

Reports from a wide range of users state that MORLIFE clutches serve from four to ten times longer than previous types of friction clutches using organic facing materials. Adjustments and plate replacements have been reduced to one-tenth those required by previous clutches. The longer on-the-job hours and increased pay loads which MORLIFE clutches make possible furnish a competitive advantage for machines in which these NEW clutches are used. Increased clutch life results in decreased operation cost of vehicles or equipment. Let our engineers show you how your product will benefit through using MORLIFE clutches.

SEND FOR THIS HANDY BULLETIN! Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

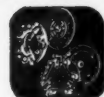
ROCKFORD Clutch Division BORG-WARNER

314 Catherine St., Rockford, Ill., U.S.A.

Export Sales Borg-Warner International — 36 So. Wabash, Chicago 3, Ill.

CLUTCHES

For more facts, use Request Card at page 18 and circle No. 402



Small Spring Loaded



Heavy Duty Spring Loaded



Oil or Dry Multiple Disc



Heavy Duty Over Center



Power Take-Offs



Speed Reducers

Service-Master®

for '57 is

BIGGER



You get all these NO-CHARGE EXTRAS

- Nylon bushings in all door hinges—doors can't bind.
- Bins with adjustable dividers—plus a hinged cover that keeps parts in place.
- Key-locking doors—made from two steel panels for super strength.
- Ready-for-work shelves and bins—built right in the body.

Compartments are now 14 1/2" deep... 2" deeper than ever. More space for large boxes and cans—for more tools, parts, and supplies, too. Cargo area, which stretches 48 1/2" between compartments, has a tread-plate steel floor that really fights back when it comes to rough treatment. Models for old or new 1/2, 3/4, 1, and 1 1/2 ton chassis.

Available for immediate delivery in all 48 states

Optional equipment includes telescopic roof, ladder racks, pipe racks, vise bracket, and bumper-step. Canopy Top, shown here, furnishes more fully-enclosed cargo area.



McCABE-POWERS AUTO BODY CO.

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ST. LOUIS 15, MO.

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BERKELEY 10, CALIF.

McCABE-POWERS AUTO BODY COMPANY
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Please send me descriptive literature and name of my nearest SERVICE-MASTER distributor.

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COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

57H

For more facts, use coupon, or Request Card at page 18 and circle No. 403



It's the **PREHY** Grouter & Placer

(in the size and model to
meet your job requirements).

that affords **BIG SAVINGS** and a
job well done.

★ ★ ★

A machine for every need — from the
hand pump grouting-in of reinforcing
rods, all types of grouting and soil stabili-
zation, to pneumatic placing of $\frac{3}{4}$ " ag-
gregate mixes.

Write for circular describing full line of
PREHY equipment and accessories.

PREHY COMPANY

420 Lexington Ave.,
New York 17, N. Y.

For more facts, use Request Card at page 18 and circle No. 404



No Shoring

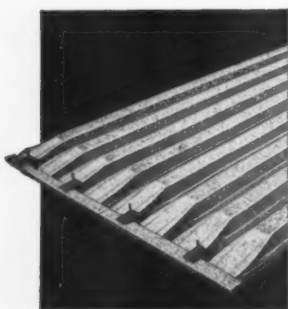
No Stripping

No Wasted
Material



*Leave-in-
Place*

STEEL FORMS



for concrete
bridge
decking

U.S.F. Steel Forms are custom fabricated for exact fit to
bridge structurals. More than required strength is provided
to support the wet concrete. They install rapidly with
common hand tools from *top side*, eliminating need for
wood form construction, shoring, and safety nets. Per-
manently left-in-place, they eliminate costly stripping
operations. Permits painting below-the-deck steel before
pouring concrete. Speed up schedules—save time and labor
—avoid penalties with the most practical method of deck
form construction yet developed—U.S.F. Leave-In-Place
Steel Forms.

Illustrated data sheet available on request

UNITED STEEL FABRICATORS, INC.

WOOSTER, OHIO

PRODUCTS

Hollow Metal Doors • Prefabricated Metal Buildings • Window Wells •
Highway Guard Rail • Bridge Flooring • Steel Forms for Concrete Bridge
Floors • Corrugated Metal Pipe • Sectional Plate Pipe and Pipe Arches

For more facts, use Request Card at page 18 and circle No. 405

Product Parade

Steel pile shoes pierce frozen ground

Steel pile shoes said to insure maxi-
mum skin friction and provide full
load-bearing capacity for each pile
are offered by The American Pulley
Co.

The $\frac{1}{4}$ -inch steel shoe fits over the
end of the previously sharpened pile
and, in effect, provides a heavy,
pointed steel casing over the pile
point.

Use of these pile shoes is said to
prevent "brooming" when driving
through frozen or rocky ground.

For further information write to
The American Pulley Co., Dept. C&E,
4200 Wissahickon Ave., Philadelphia,
Pa., or use the Request Card at page
18. Circle No. 115.



New concrete bucket for portable hoist

A new 13-cubic-foot bucket for its
standard automatic portable hoist is
announced by the Tusky Hoist Divi-
sion of the Tubular Structures Corp.
of America. The new concrete bucket
is fully automatic and is quickly in-
terchangeable with the material plat-
form of the hoist.

The bucket may be operated from
the ground or from any working
height, movement up and down is
very fast and automatically con-

trolled, the manufacturer states. It
may be used at heights up to 100
feet and automatically dumps itself
at a controlled pouring rate. The
bucket is said to dump clean at any
preset level, with partial dumping
easily controlled when desired.

For further information write to
the Tubular Structures Corp. of
America, Dept. C&E, 2960 Marsh St.,
Los Angeles 39, Calif., or use the Re-
quest Card at page 18. Circle No. 163

New internal vibrator handy in tight work

Its new, small-diameter, 17-pound
internal concrete vibrator is available
from the Viber Co.

Designated Model 11A, the unit fea-
tures high speed and low amplitude
for consolidating low slump concrete
used in prestressed-concrete manufac-
ture.

According to the manufacturer, the
10 $\frac{1}{2}$ -inch head with a diameter of
1 $\frac{5}{16}$ inches is ideal for stems of
T-members and hard-to-reach areas

peculiar to prestressed-concrete forms.
The interchangeable, flexible shaft
drive is obtainable in either 14 or 24-
inch lengths.

A replaceable rubber tip is a stand-
ard component of the vibrator head.
Steel tips are available on request.

For further information write to
the Viber Co., Dept. C&E, 726 S
Flower St., Burbank, Calif., or use
the Request Card at page 18. Circle
No. 119.

New aerial platform is self-propelled

All boom movement and travel of
the vehicle itself are controlled by
the workman on the platform of a
new self-propelled aerial platform
available from the Pitman Mfg. Co.
Called the Travel Tower, it is a 3-
wheeled vehicle with a capacity of
250 pounds on the platform, regard-
less of boom position.

The man on the platform can drive
the machine forward and reverse,
steer it, raise and lower the boom,
and swing the boom through an arc
of 36 degrees. All operations except
the forward and reverse drive are
foot-controlled, leaving the opera-
tor's hands free.

A Wisconsin 7 $\frac{1}{2}$ -hp engine with
electric starter powers a hydraulic
pump for elevating the boom to a
height of 13 feet, giving the operator
a working height of 18 feet.

Hydraulic power also swings the
boom. This same engine also drives
into a band-type transmission, which
in turn drives into a standard auto-
mobile differential. The maximum
speed of the machine is 2 mph.

Steering is accomplished by brak-
ing the driving wheels.

For further information write to
the Pitman Mfg. Co., Dept. C&E, 300
W. 79th Terrace, Kansas City, Mo.,
or use the Request Card at page 18
Circle No. 17.



CONTRACTORS AND ENGINEERS



Masonry drill attachment for 1/4-inch electric drill

A rotary impact masonry drill attachment for use with a heavy-duty 1/4-inch electric drill, said to drill holes faster and easier into all types of masonry, is announced by Ideal Industries, Inc.

The new drill attachment inserts into a 1/4-inch drill chuck like a bit; then the masonry bit inserts into the attachment and is secured with a set screw. The bite-twist action of a typical 3/8-inch bit can cut through 1 1/4 inches of solid concrete in only 30 seconds, according to the manufacturer.

The attachment weighs only 20 1/2 ounces and adds only 4 1/4 inches to the length of an electric drill.

For further information write to Ideal Industries, Inc., Dept. C&E, 1366 Park Ave., Sycamore, Ill., or use the Request Card at page 18. Circle No. 10.

Dozer winterizing tool rips frozen ground

Its heavy-duty Buck Forte dozer rooter said to make an ideal winterizing tool for tractors is offered by the Electric Steel Foundry Co.

According to the manufacturer, this unit rips through hard-frozen ground quickly and economically, with no need for blasting or thawing the ground.



The rooter is said to be easily and quickly installed, and models are available for all straight and angle dozers with blade heights from 26 to 54 inches.

For further information write to the Electric Steel Foundry Co., Dept. C&E, 2141 N. W. 25th Ave., Portland 10, Oreg., or use the Request Card at page 18. Circle No. 110.

Liquid gear composition in spray-on container

A liquid gear composition in a new 16-ounce push-button aerosol container for handy lubrication of open gears and sliding surfaces is available from The Whitmore Mfg. Co.

According to the manufacturer, a tough protective film of Handi-Lube composition is sprayed from a distance of 12 to 18 feet onto the pressure side of a surface. This film of lubricant is said to eliminate harmful metal-to-metal contact and increase gear life by putting the wear on the lubricant instead of the metal.

To provide the correct open gear lubrication under all climatic conditions, the composition is available in



light, medium, and heavy.

For further information write to The Whitmore Mfg. Co., Dept. C&E, 3816 Iron Court, Cleveland 4, Ohio, or use the Request Card at page 18. Circle No. 100.

SOILTEST Incorporated

FAMOUS FOR ACCURATE

TEST APPARATUS

FOR LABORATORY AND
JOB-SITE TESTING of



soils

MODEL U-160
Unconfined Compression Apparatus for strength testing of undisturbed samples of cohesive or semi-cohesive soils



concrete

MODEL CT-69
The Slump Cone is widely used as a measuring device in determining the consistency or slump of freshly mixed Portland Concrete Cement in accordance with ASTM and AASHTO

MODEL CT-386
The Kelly Ball is a new direct method of testing concrete consistency as placed or in forms



asphalt

MODEL AP-175
Test results are accurate and uniform when the Centrifuge Extractor is used for determination of bituminous mixtures. An Electric Model, 1500 gram capacity, is available.

Our Catalog contains comprehensive lines of Engineering Test Apparatus for the testing of Soils, Construction Materials, Concrete, Asphalt, Steel, Iron, Rubber, Plastics, Woods, and Ceramics. Illustrated Bulletins describe in detail the apparatus shown above.

SINGLE ITEMS TO SELF-CONTAINED
TRUCK OR TRAILER MOBILE LABORATORIES

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60 East 42nd St., N.Y. 17, N.Y. YUkon 6-7383

For more facts, circle No. 406

OCTOBER, 1957



CONCRETE GUNS and CONTINUOUS MIXERS



**FASTEST, AND MOST
PROFITABLE METHOD OF
CONCRETE CONSTRUCTION,
REPAIR AND
RESTORATION.**

In building swimming pools, irrigation ditches, retaining walls — in repairing curbs, streets, roads and bridges — from the biggest construction project to the smallest repair job, nothing is more versatile or more efficient than an AIRPLACO Concrete Gun. Investigate today the better and more profitable AIRPLACO way of gunning concrete and other aggregates.



WHAT ARE YOUR PRODUCTION REQUIREMENTS?

AIRPLACO Guns are available in a wide range of sizes and production capacities to fit your job requirements... from 1/2 to 7 cubic yards per hour production... more with a 500 or 600 cfm compressor.

FREE CATALOG

See your equipment distributor or write direct for the AIRPLACO-complete line catalog.



AIR PLACEMENT EQUIPMENT CO.

1007 WEST 24TH ST. • KANSAS CITY 8, MO.

MANUFACTURERS OF ADVANCED DESIGN CONCRETE GUNNING,
MIXING, GROUTING AND SANDBLASTING EQUIPMENT.

For more facts, use Request Card at page 18 and circle No. 407

Surveying Washington

by HUBERT KELLEY, JR.

Constructionwise, the first session of the 85th Congress was indeed busy. Between lengthy and headlined debates on the budget, foreign aid, inflation, and civil rights, the lawmakers passed legislation on hydroelectric development of the Niagara River and funds for completion of the American portion of the St. Lawrence Seaway. Congress also managed time for action on bills relating to military construction and appropriations for navigation and flood control projects.

On the negative side—but still to be counted as action taken—Congress

defeated measures on federal aid for school construction, a federal dam at Hells Canyon, and billboard control on the interstate highway system.

Of course, plenty of unfinished business remained on the docket for final disposition next year. Examples are legislation to amend federal construction contract procedures, the Fryingpan-Arkansas reclamation project, and proposed extension of the interstate highway system.

In addition, some of the issues left for "dead" this year may arise to add zest to election-year 1958.

Here is a box score of some of the important actions of the 1957 Congress:

Niagara Power—In a landmark action Congress passed a law authorizing the New York Power Authority, an instrument of New York State, to construct and operate a \$532 million power plant at Niagara Falls. The hydroelectric project will have a total installed capacity of 2,190,000 kw, with 1,800,000 kw being firm power on a 17 hour per day basis. The low-cost electricity will supply western and central New York and por-

tions of Pennsylvania and Ohio, and is expected to become available in about two and a half years.

The legislation directing the Federal Power Commission to license the New York Agency to do the job closed seven years of controversy over whether redevelopment at the Falls should be publicly or privately undertaken. Under a 1950 treaty with Canada, Congress had to decide whether a private company or governmental organ would utilize the American share of the waters above the Falls for power purposes.

While Congress quibbled over the matter, Canada went ahead and exploited the power potential on its side of the river.

Niagara Mohawk Power Corp., a private utility, will receive 445,000 kw annually of the plant's output to replace the power capacity it lost when a rock slide destroyed most of its Schoellkopf generating plant at the Falls in June 1956. This will enable it to supply its industrial customers in the Niagara-Buffalo area, who have been hard pressed for low-cost power since the disaster.

In turn, Niagara Mohawk will surrender its 50-year FPC license to operate the Schoellkopf plant—which is now useless—and yield its right to divert the river waters for power generation to the New York Power Authority. The company originally opposed any federal or state project at the Falls, but acquiesced in the present power-sharing arrangement after the rock slide destroyed its facility.

Financing of the Niagara project will not come out of the taxpayer's pockets—a big reason why the authorizing legislation was enacted. The capital will be obtained through the sale of revenue bonds of the state power authority.

Federal contracts—The House passed by voice vote a bill to amend federal construction contract procedures in order to thwart bid shopping and peddling. However, Congress adjourned before the Senate could act.

The House bill, reported out of the Senate Judiciary Committee without hearings, was substituted for an identical bill introduced by Sen. John McClellan (D.—Ark.) and co-sponsored by a bipartisan group of 11 other senators. The measure came up in the Senate on the last day of the session but was passed over in the rush to get home.

Since all bills introduced in 1957 stay alive next year, the chances of this legislation being passed early next year appear good. Whether it would run into a White House veto, in view of government agency opposition, is an open question.

The House-passed bill provides that a general contractor bidding for a federal lump-sum award over \$100,000 must list in his prime bid the names of the mechanical specialty subcontractors he will hire to per-



You... **WOULD GUESS THIS DAVIS RIG HIGHER THAN IT ACTUALLY IS ...**
...after you compare what you get!



...and look what it does!

Only the Davis 210 Backhoe can dig flush alongside a building like this. It has three interchangeable digging positions—from either end or from the center of the frame. It utilizes an exclusive rotary hydraulic boom swing cylinder that provides 200° continuous operating arc.

When you compare all the features of the Davis Loader-Backhoe with all the others, you would just naturally think it would cost more.

The truth is, it actually costs less than most other makes. And now is the time to see your Davis Dealer for a deal!

The Davis Loader-Backhoe does have more to offer that will save you time and make you more money. Visibility is just one. The loader has strength built in so no braces mar your vision. You sit high on the backhoe so you can see exactly where you're digging and the seat moves with the boom to let you always face your work.

Consider utility, maneuverability, strength, quick detachability, quality construction and power (with 7,000 to 10,000 pounds of breakaway on the backhoes) you will come up with the same answer that thousands of backhoe and loader users have, "Davis is the best buy, bar none." Better get in to see that Davis Dealer today!

Davis Loaders and Backhoes are available for all popular models of International, Ford, Fordson Major, Ferguson, Case, Massey-Harris, Allis-Chalmers, Oliver, John Deere, and Minneapolis-Moline Tractors.

SOLD AND SERVICED EVERYWHERE BY BETTER DEALERS



For the name of your nearest dealers call Western Union by number and ask for Operator 25... or write direct. Please specify make of tractor.



MASSEY-HARRIS-FERGUSON, Inc.
INDUSTRIAL DIVISION
1009 SOUTH WEST ST. DEPT. B, WICHITA 15, KANSAS

For more facts, use Request Card at page 18 and circle No. 408

form each major category of mechanical specialty work. Substitutions would be permitted within five working days of the opening of the prime bids.

Highways—The Senate Public Works Committee voted down, 7 to 6, a proposal to regulate billboards along the projected 41,000-mile interstate highway system and deferred for possible action next year a companion proposal to add 7,000 miles to the system. Both proposals were part of the same bill submitted, without recommendation, by the roads subcommittee.

The defeated billboard control plan would have encouraged the regulation of outdoor advertising by giving an extra three-fourths of one percent in federal funds—90.75 instead of 90 per cent—to states which agreed to adhere to federal control standards.

The mileage expansion proposal was tabled but not killed outright along with advertising control.

Hells Canyon—With the support of Southern Democrats who helped beat the bill in 1956, the Senate approved, 45 to 38, legislation to erect a huge multipurpose federal dam at Hells Canyon on the Snake River. However, the House Interior Committee ended the dreams of public power advocates by voting, 16 to 14, to kill the bill, which would have cancelled the licenses under which Idaho Power Co. is going ahead with construction of two lower-level private dams in the area.

Defeat of the federal development scheme can be traced largely to unrelenting administration opposition. On the eve of the House Committee vote, President Eisenhower said it would be "unfortunate indeed" if continued controversy over the high dam delayed badly needed power generation in the Pacific Northwest which Idaho Power, a private utility, was willing to furnish. He noted that a high dam would not be able to supply electricity for at least five or six years, whereas the utility's Oxbow and Brownlee dams are due to be on the line by the end of 1958.

Being a potent political issue in the West, Hells Canyon will undoubtedly come in for more discussion in '58. But nothing more serious than harsh words is likely to develop. Idaho Power's construction program will be too near completion for legislative nullification.

Rivers and Harbors—Congress passed an \$858 million appropriation bill for rivers and harbors and flood control projects for fiscal 1958. It includes \$449 million for general construction of civil works administered by the Army Department.

Another \$1.5 billion omnibus public works bill passed the Senate and is pending in the House, where it was sliced to \$1.4 billion before being re-

ported out of the committee for action next year. The bill authorizes some 100 projects for river-harbor navigation, flood and beach erosion control, and other purposes.

Military construction—Congress passed a compromise bill calling for \$1.2 billion in military project authorizations in fiscal 1958, including \$11.9 million for the Air Force Academy at Colorado Springs.

School construction—Federal aid for school construction, beaten again this year in the House, will undoubtedly

pop up once more as an issue in 1958. The National Education Association is already girding for the battle, having substantially boosted its budget to help get the legislation through. But success looks doubtful, unless pressure is exerted.

Fryingpan-Arkansas—A bill authorizing this reclamation work passed the Senate and is pending before a House Interior subcommittee, which has completed hearings. The measure calls for spending some \$156.5 million to collect surplus water from the Fryingpan River on the

western slope of the Continental Divide and transport it through a tunnel in the mountains to the upper Arkansas River Valley in Colorado.

Up to 322,000 acres would be fully irrigated, with seven hydroelectric plants also generating 104,800 kw for use east of the Divide.

Supported by the administration, the bill twice before got through the Senate, in 1954 and 1956, but encountered roadblocks in the House. The story may be repeated next year, although the project's proponents believe chances of enactment are fairly good. THE END



Athey PR20-Cat DW20 has 34-ton, 22.5 cu. yd. capacity. Four-wheel tractor gives speeds up to 32.1 MPH and good roadability for long hauls.



Athey PR15-Cat DW15 has 22-ton capacity and top speed of 37.2 MPH for high-speed hauling and dumping.



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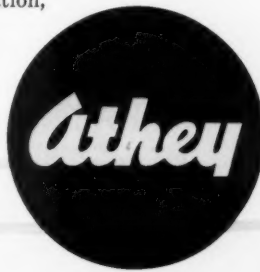
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For more facts, use Request Card at page 18 and circle No. 409

Product LITERATURE

For further information on any of the literature described in the following section, circle the designated number on the Request Card at page 18.

Rubber-tire tractors—a folder describing the advantages of Wagner tire-mounted tractors. Four-wheel planetary drive, Pow-R-Flex coupling, double axle oscillation, and 4-wheel power steering are among the features discussed. The bulletin especially stresses the units' versatility, with photos illustrating a wide range of application.

Write to Wagner Tractor, Inc., Dept. C&E, 8027 N. E. Killingsworth, Portland 20, Oreg., or use the Request Card at page 18. Circle No. 79.

Quarry equipment—a 20-page brochure illustrating and giving specifications for the manufacturer's line of crushing, screening, washing, loading, feeding, and conveying equipment for the quarrying and aggregate industries.

Write to the Universal Engineering Corp., Dept. C&E, 625 C Ave., N. W., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 32.

Winter liners—an illustrated catalog describing winter liner hoods for

hard hats, as well as storm hoods and caps for complete protection against winter climate.

Write to Parker Safety Equipment Co., Dept. C&E, 785-5 Lyons Ave., Irvington 11, N. J., or use the Request Card at page 18. Circle No. 97.

Winter starting fluid—literature describing the development of Spray starting fluid for engines in cold weather. Offers helpful "do's and don'ts" in the use and application of starting fluids in general, as well

as detailing the advantages of the Spray product.

Write to the Spray Products Corp., Dept. C&E, P. O. Box 584, Camden 1, N. J., or use the Request Card at page 18. Circle No. 12.

Grease seals—a booklet entitled "The Big Three" describing benefits from using Cat grease seals in Caterpillar equipment. In two colors, the illustrated booklet outlines why every owner should place extra emphasis on the grease seals used in his machine to get the proper work from it. Obtainable in French, English, Portuguese, and Spanish.

Write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 19.

Winter concreting—a brochure entitled "Recommended Practice for Winter Concreting". Includes eight charts showing the comparative compressive strength of concrete made with Type 1 and Type 3 cements with zero and 2 per cent calcium by weight of cement. Temperature comparisons made at 25, 40, 55, and 73 degrees F.

Write to the Calcium Chloride Institute, Dept. C&E, 909 Ring Bldg., Washington 6, D. C., or use the Request Card at page 18. Circle No. 174.

Tractor—a specification sheet featuring a cutaway view of the Allis-Chalmers HD-21 diesel-powered torque-converter-drive crawler tractor. Marginal notes alongside the illustration point out many of the HD-21's mechanical, design, and construction features.

Write to the Allis-Chalmers Mfg. Co., Construction Machinery Division, Dept. C&E, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 75.

Soil-testing equipment—a 128-page catalog describing and illustrating the complete line of equipment from Solltest, Inc. Equipment presented ranges from a single item to a complete modern laboratory for soils, concrete, and asphalt testing. Price list included.

Write to Solltest, Inc., Dept. C&E, 4711 W. North Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 171.

Wire reinforcing—a revised edition of a manual on the use of welded wire fabric in reinforced-concrete construction. Contains comprehensive design data illustrated with many diagrams, tables, and on-the-job photographs.

Write to the Wire Reinforcement Institute, Inc., Dept. 50, Dept. C&E, 1049 National Press Bldg., Washington 4, D. C., or use the Request Card at page 18. Circle No. 160.

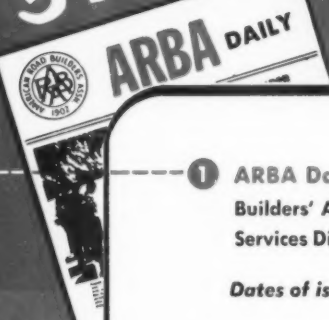
Tractor-mounted rotary drills—detailed specifications of the Model M-8TA tractor-mounted rotary drill. Also contains descriptions of both tractor and truck-mounted units with rated capacities to 2,000 feet.

Write to the Davey Compressor Co., Dept. C&E, Franklin Ave., Kent, Ohio, or use the Request Card at page 18. Circle No. 72.

Pipe-cutting unit—literature on the Wallace rotary pipe cutter for use with large pipe. Describes units available for diameters 8 to 20 inches, and 12 to 24 inches. Close-up photos of important components.

Write to the Wallace Supplies Mfg. Co., Dept. C&E, 1300 Diversey Pkwy., Chicago 14, Ill., or use the Request Card at page 18. Circle No. 53.

IN '58, Contractors and Engineers will publish 3 KEY CONVENTION DAILIES



- 1 **ARBA Daily** — Daily newspaper coverage of the important American Road Builders' Association meeting and the exhibit sponsored by the Materials and Services Division —

Dates of issues: January 20, 21, 22 — at Washington, D. C.

- 2 **AED Daily** — The news of the construction industry while it's news during the annual, nationwide get-together of dealers and manufacturers at the Associated Equipment Distributors' convention and exhibit —

Dates of issues: January 27, 28, 29 — at Chicago, Illinois

- 3 **Sand & Gravel — Ready Mixed Daily** — On-the-spot daily coverage of the joint meeting and major equipment exhibit sponsored by the National Sand & Gravel and National Ready Mixed Concrete Associations.

Dates of issues: February 10, 11, 12 — at Chicago, Illinois

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For more facts, use Request Card at page 18 and circle No. 411

Forms—a 28-page general catalog, furnishing detailed data on the Symons basic line—wood-ply forms, steel-ply forms, mag-ply forms, wide panel forms, lo-wall forms, culvert forms, form hardware, form ties and accessories, scaffold brackets, safety shores, and column clamps. Also includes information on the firm's field and sales service. Illustrated with drawings and on-the-job photographs.

Write to the Symons Clamp & Mfg. Co., Dept. C&E, 4249 W. Diversey Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 84.

Handy reference manual—a spiral-bound, pocket-sized reference manual for Gradall owners. Drawings furnish all Gradall dimensions and specifications, and on-the-job photos show the various models performing a wide variety of work. Also contains complete, illustrated descriptions of all the seventeen different attachments available.

Write to the Warner & Swasey Co., Dept. C&E, 5701 Carnegie Ave., Cleveland, Ohio, or use the Request Card at page 18. Circle No. 80.

Masonry saws—a pamphlet picturing the outstanding features of the Eveready 2-hp BrikSawMatic and standard BrikSaw. An explanation of the workings of the two saws is included in the booklet.

Write to the Eveready BrikSaw Co., Dept. C&E, 1509 S. Michigan Blvd., Dept. 549, Chicago 5, Ill., or use the Request Card at page 18. Circle No. 170.

Materials handling—an illustrated guide for selecting the correct Hyster truck and attachment for specific mechanical handling operations. Provides working specifications and summaries of the outstanding features of each unit.

Write to the Hyster Co., Dept. C&E, 2902 N. E. Clackamas St., Portland 8, Oreg., or use the Request Card at page 18. Circle No. 70.

Steam cleaners—a folder describing Turbo steam cleaners, available in both oil-fired and electric-powered design. Both types are described, and specifications are given for each. Illustrated with photographs.

Write to the Turbo Machine Co., Dept. C&E, 840 W. Main, Lansdale, Pa., or use the Request Card at page 18. Circle No. 77.

Heavy-duty fork truck—a brochure describing the Clarklift Y-200, a 10-ton-capacity pneumatic tire fork truck for heavy-duty outside handling. Charts and drawings indicate dimensional characteristics and turning radius, as well as drawbar pull capacity and upright dimensions. All major components are described, and action photos illustrate the unit's applications.

Write to the Clark Equipment Co., Industrial Truck Division, Dept. C&E, Battle Creek, Mich., or use the Request Card at page 18. Circle No. 71.

Heavy-duty trailers—a generously illustrated catalog covering many of the Birmingham line of standard heavy-duty low-bed trailers, and special type models made to order. Also describes various tilt-type models, as well as dollies for several applications. Dimensions and specifications for all standard models.

Write to the Birmingham Mfg. Co., Dept. C&E, P. O. Box 1351, Birmingham, Ala., or use the Request Card at page 18. Circle No. 92.

Truck tires—an illustrated catalog covering the complete Lee line of truck tires for on and off the highway use. Includes facts about job payload performance and information on the tires' construction features. Catalog C-414.

Write to the Lee Rubber & Tire Corp., Dept. C&E, Conshohocken, Pa., or use the Request Card at page 18. Circle No. 145.

Big pipe transportation—a folder describing and illustrating the Schonrock tilt-deck trailer for use in transporting large culverts, pipe, and other bulky freight. According to the literature, the unit will pick up large, bulky objects, move them to location, and unload at ground or raised level, all without the use of special hoisting equipment.

Write to the Schonrock Mfg. Co., Dept. C&E, P. O. Box 1543, San Angelo, Texas, or use the Request Card at page 18. Circle No. 44.

Motor crane-excavator—a brochure on the Heco motor crane-excavator available in 8½ and 10½-ton models. Text and on-the-job photos stress the easy convertibility of the unit to a wide range of applications. Close-up shots of major components.

Write to the Hardwicke-Etter Co., Dept. C&E, Sherman, Texas, or use the Request Card at page 18. Circle No. 158.

Engine hour meters—a catalog describing various types of Hobbs engine hour meters designed to tell

FULLER ROADRANGER® Transmission standard in new LeT-WesCo truck

Fuller's 9-speed R-1150 ROADRANGER Transmission was selected for the revolutionary new 30-ton LeTourneau-Westinghouse off-road hauler "... because of the wide range of gear selection and speeds, plus the fact that it shifts easily and quickly."

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Product Literature

at a glance the actual hours and minutes of engine operation. Direct and alternating current hour meters are detailed. Illustrated with photographs.

Write to the John W. Hobbs Corp., Division of Stewart-Warner Corp., Dept. C&E, 1826 Diversey Pkwy., Chicago 14, Ill., or use the Request Card at page 18. Circle No. 146.

Asphalt plant equipment—literature describing the center outlet-type dryer for use with any McCarter asphalt plant. The prime advantage of this type dryer during the winter operation, according to the manufacturer, is that asphalt plant operators can economically produce high tonnages of cold-mix for stockpiling.

Write to McCarter Iron Works, Inc., Dept. C&E, Mill & Washington, Norristown, Pa., or use the Request Card at page 18. Circle No. 68.

Versatile excavating unit—a brochure describing the new Model 360 Hydro-Scopic Hopto, a telescopic-boom unit capable of a 360-degree swing. Action photos stress the versatility of the machine. Also includes data on the machine's Snap-On tool and bucket adapter. Diagrams, specifications.

Write to the Badger Machine Co., Dept. C&E, 1122 W. Fifth St., Winona, Minn., or use the Request Card at page 18. Circle No. 107.

Engine pre-heaters—a maintenance manual on Kim Hotstart electric pre-heaters for gasoline and diesel engines. Includes parts list for standard and special units, as well as informative material on replacement of elements. Exploded drawings of the various models.

Write to the Kim Hotstart Mfg. Co., Dept. C&E, W. 917 Broadway, Spokane 1, Wash., or use the Request Card at page 18. Circle No. 121.

Salt-soil stabilizing—a technical pamphlet titled "Morton Salt Stabilized Road Bases". Discusses the advantages of salt-soil stabilized roads as opposed to loose aggregate roads, and details the steps necessary in salt stabilizing a road. Illustrated with charts and photographs.

Write to the Morton Salt Co., Dept. C&E, 120 S. LaSalle St., Chicago 3, Ill., or use the Request Card at page 18. Circle No. 116.

Tractor rollers—a fact sheet describing the D & M roller for crawler-type equipment. According to the literature, the roller is equipped with roller bearings and special seals which eliminate greasing during its entire life. Detailed description of the product, as well as a list of tractors for

which rollers are available.

Write to D & M Machine Works, Inc., Dept. C&E, 2304 Abalone St., Torrance, Calif., or use the Request Card at page 18. Circle No. 82.

Hose, conveyor belting—an illustrated catalog describing 26 types of Acme hose and 4 types of conveyor belting. For each type, information is given on application, composition, and sizes available. Also includes complete tabular listings of diameters, working pressures, weights, and piles.

Write to the Acme Rubber Mfg. Co. Division, Acme-Hamilton Mfg. Corp., Dept. C&E, Trenton 3, N. J., or use the Request Card at page 18. Circle No. 55.

Prestressed-concrete tanks—a technical bulletin on the design of prestressed-concrete tanks. Gives engineering data and formulas of general interest to anyone considering prestressed concrete for storage tanks. Diagrams, graphs, dimensional drawings.

Write to the Preload Co., Inc., Dept. C&E, 211 E. 37th St., New York 16, N. Y., or use the Request Card at page 18. Circle No. 52.

Optical instruments—an informative 56-page manual covering the basic principles of optical tooling. Photographs and drawings illustrate the major instruments and accessories used in optical tooling. Drawings show the optical principles used in applying the equipment.

Write to the Keuffel & Esser Co., Dept. C&E, Adams and Third Sts., Hoboken, N. J., or use the Request Card at page 18. Circle No. 38.

New motor scraper—a booklet describing the performance and design features of the TS-160 motor scraper, recently added to the Allis-Chalmers line. Contains specifications, as well as close-up photographs of major components.

Write to the Allis-Chalmers Mfg. Co., Construction Equipment Division, Dept. C&E, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 81.

Steam cleaners—a bulletin describing the new Mark series of three direct-fired Kelite steam cleaners. In addition to illustrations of each model, the bulletin carries a table of specifications for each machine, as well as a list of specifications and optional features for all three Kelite units. Bulletin P-5571.

Write to the Kelite Corp., Dept. C&E, 81 Industrial Road, Berkeley Heights, N. J., or use the Request Card at page 18. Circle No. 49.

Calcium chloride—a manual entitled "Handling, Storing and Applying Calcium Chloride". The literature is designed to help contractors establish better winter maintenance procedures. Manual HM-1.

Write to the Calcium Chloride Institute, Dept. C&E, 909 Ring Building, Washington 6, D. C., or use the Request Card at page 18. Circle No. 120.

Drilling equipment—a 164-page catalog covering specifications and working data for the complete line of Stardrill-Keystone, Franks, and Acme machines and equipment. Also discusses percussion and combination machines; rotary machines; percussion and rotary tools; field procedures for drilling, tool dressing, tempering and handling; and much more.

Write to the Stardrill-Keystone Co., Dept. C&E, Beaver Falls, Pa., or use the Request Card at page 18. Circle No. 43.

To obtain any of the literature described in this section, circle the indicated number on the handy Request Card at page 18.

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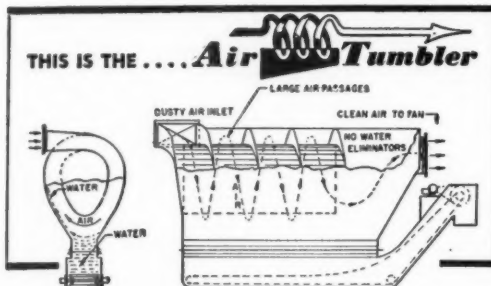
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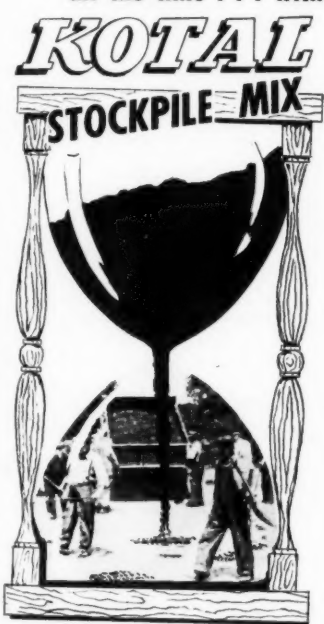
Calcium chloride—a manual entitled "Calcium Chloride for Winter Maintenance". Discusses the latest methods of using calcium chloride in the treatment of abrasives, and also contains specific data on procedures for its direct application. Illustrated with photographs, sketches, charts.

Write to the Calcium Chloride Institute, Dept. C&E, 909 Ring Building, Washington 6, D. C., or use the Request Card at page 18. Circle No. 155.

End loader sweeper—a fact sheet on the Little Giant Model EL-C end loader sweeper, said to be adaptable to most front-end loaders. Contains photographs of both the sweeper unit and its optional equipment. Specifications.

Write to Little Giant Products, Inc., Dept. C&E, 1530-50 N. E. Adams St., Peoria, Ill., or use the Request Card at page 18. Circle No. 129.

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OCTOBER, 1957

Bituminous paver—a bulletin describing the Blaw-Knox PF-90 10-ton-capacity bituminous paver-finisher. Illustrates many of the various application possibilities of the machine, as well as providing general specifications of its major components. Also contains general information on the PF-45 blacktop paver, designed for small asphalt jobs.

Write to the Construction Equipment Division, Blaw-Knox Co., Dept. C&E, 40 Charleston Ave., Mattoon, Ill., or use the Request Card at page 18. Circle No. 62.

Crawler crane—a copiously illustrated catalog featuring the new Bay City heavy-duty, 1-yard, 25-ton-capacity crawler crane. Typical photos include cutaway views of lower base assemblies, speed reducing units, and tandem drums with booster-operated clutches. Complete pictorial information from crawlers to boompoint.

Write to Bay City Shovels, Inc., Dept. C&E, Center St., Bay City, Mich., or use the Request Card at page 18. Circle No. 106.

Sanitary landfill—a booklet describing sanitary landfill methods, organization, operation, and necessary equipment with which to carry out the job. Includes on-the-job photographs of equipment working on landfill, and sketches showing how the various landfill methods are developed.

Write to the Allis-Chalmers Mfg. Co., Construction Machinery Division, Dept. C&E, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 74.

Materials hoisting—a folder describing the Haynes High Hoist, a completely portable lifting assembly for construction materials. Discusses ease of installation, moving, loading, and other advantages. On-the-job photographs.

Write to Haynes, Inc., Dept. C&E, 4980 Park Lake Road, East Lansing, Mich., or use the Request Card at page 18. Circle No. 30.

Scrapers—literature on Be-Ge fully hydraulic Speedhaul scrapers for use with Wagner industrial wheel tractors. Gives complete specifications for four Speedhaul units adaptable to the Wagner IND-9 and IND-14 tractors. On-the-job photographs.

Write to the Be-Ge Mfg. Co., Dept. C&E, P. O. Box B-1, Gilroy, Calif., or use the Request Card at page 18. Circle No. 78.

Trench filler—a bulletin on the Ulrich Model T-20 trench filler for use with Caterpillar No. 12 and 112 motor graders. According to the literature, the T-20 is ideal for placing material into road widening or shouldering excavations. Illustrated with photographs, sketches, and dimensional drawings. Specifications included.

Write to the Ulrich Mfg. Co., Dept. C&E, 1042 W. Grand Ave., Roanoke, Ill., or use the Request Card at page 18. Circle No. 137.

Drill bits—a new general catalog covering Hoffman oriented diamond drill bits. Designed for quick, easy location of important drill-bit data, the catalog lists sizes, setting charges, weights, uses, and other pertinent information for all standard bits. Prices included.

Write to the Hoffman Bros. Drilling Co., Dept. C&E, P. O. Box 426, Punxsutawney, Pa., or use the Request Card at page 18. Circle No. 35.

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Off-the-road traction — a fact sheet on Snap-Trac, a device said to double the traction of new or old tires in off-the-road work. Gives data on additional drawbar pull gained for a variety of trucks of

different weights in sand, mud, and soft humus. Illustrated

Write to Snap-Trac, Inc., Dept. C&E, Middlefield, Ohio, or use the Request Card at page 18. Circle No. 56.

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Lays a Narrow Strip or Full Traffic Lane

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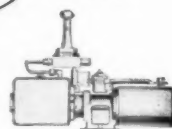
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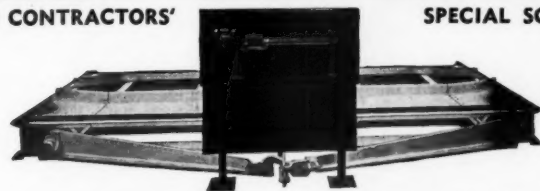
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SPECIAL SCALE



For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site. Cap.: 15-18-20-30, 50 tons
Write us for name of your nearest distributor

WINSLOW SCALE COMPANY

P.O. Box 1198
Terre Haute, Indiana

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WISCONSIN TRAILERS FOR EFFICIENCY AND ECONOMY

IDEAL for hauling CAT 955 AC, H D - 6'G Trencher, 10 to 12 Ton Rollers, and front end loaders. Low cost and rugged construction make it the most wanted trailer available to-day.

MODEL 1020
\$1525.00
w/tires and deck plus tax and freight



• TIMKEN BEARINGS
• REINFORCED INTERNAL BRACES
• BUDD WHEELS AND HUBS

2 to 12 Ton Capacity Trailers
• ADJUSTABLE PINTLE EYE HITCH
• LARGE, HEAVY, DEEP FRAME
• CONVENIENT HANDLES ON SIDE OF TONGUE

See your WISCONSIN TRAILER Distributor today for more details

WISCONSIN TRAILER COMPANY, 1949 N. 121 St., Milwaukee 13, Wisc.
Chosen By Comparison

For more facts, use Request Card at page 18 and circle No. 424



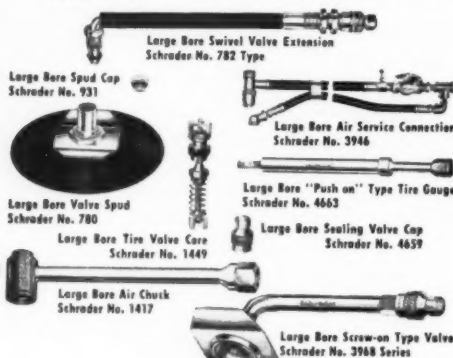
THE WHITE STUFF being loaded by the Michigan tractor shovel is salt. A number of these rigs, assigned to various stations in the five boroughs of New York City, load the material into spreaders that help keep the city streets clear during winter storms.



Here's why: Schrader knows the way to make your tire maintenance easy, economical. Schrader provides Large Bore Valves, built with the same experience and quality that has meant top service for all tire gauges, valves, and tools for so many years all over the world. And Schrader provides the tools to service your tires.

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Schrader
ESTABLISHED IN 1844

FIRST NAME IN TIRE VALVES
FOR ORIGINAL EQUIPMENT AND REPLACEMENT

For more facts, use Request Card at page 18 and circle No. 426

W. R. Meadows, founder of company, dies

W. R. Meadows, founder and president of W. R. Meadows, Inc., Elgin, Ill., died in the late summer. Meadows founded his firm in 1926 and built it to a point where it is a large producer of asphalt products. He also designed and developed many of the W. R. Meadows line of Seal-tight products.

His son, Harry G. Meadows, will carry on the business.

J. I. Case sends service training school to dealers

Two huge vans containing nearly \$50,000 worth of tractor assemblies and components are bringing a complete "factory" service training school to dealers of the J. I. Case Co., Racine, Wis. Case servicemen accompanying each mobile training unit will present a 3-day course in maintenance and service of Case TerraTrac wheel and crawler tractors and equipment.

"Quick-Way" company has new sales manager

Theodore S. Petersen is the new sales manager for the "Quick-Way" Truck Shovel Co., Denver, Colo. He succeeds Daniel S. Heffron, who resigned from his post in June.

Petersen, assistant sales manager since June, 1956, has served the firm as district representative in the California, Nevada, and Arizona area.

Bendix Radio appoints marketing manager

Myron E. Whitney has been appointed manager of marketing for Bendix Radio Division, Bendix Aviation Corp., Baltimore, Md. In his new position Whitney will apply his experience in marketing, sales, and service to Bendix Dyna-Com two-way mobile radio products, presently used in industry.

For four years he was chairman of the land mobile communications section of Radio Electronics-Television Manufacturers Association, an organization that sets the manufacturing standards for the industry.

CONTRACTORS AND ENGINEERS

Publisher's Postscript



We recently completed arrangements with the research firm of John T. Fosdick & Associates for six advertising readership studies on *CONTRACTORS AND ENGINEERS* in 1958. This means that next year, close to 1,000 readers will be asked for a personal interview regarding their reading of a given issue.

Interviews of this kind take time—half an hour or more—something few of you engineers or contractors have to spare. But those of you agreeing to an interview may perhaps find satisfaction in knowing that you are helping to improve the quality of advertising in future issues of *CONTRACTORS AND ENGINEERS*. If you like advertisements dealing with case histories, or if you read copy featuring the benefits a particular piece of equipment or a material has for you, this is your chance to "sound off" and make advertisers aware of your preferences.

Whether you merely "note" an advertisement, read the headline, look at illustrations and charts, or read some or all of the advertisement is important information to the interviewer. This information, added to that gathered in other interviews, helps to give an over-all picture of reader response. The Fosdick organization has done similar work for us in the past, and I can testify to the importance of your response in shaping plans of advertisers.

Interviewers are hard workers, too. Construction men move around so much that one interviewer has given up trying to track down his full quota of readers. Some report that the only time they can make contact is before 7 a. m. or after 7 p. m.

But despite these difficulties, it is comforting to know that, based on past interviews, issues of *CONTRACTORS AND ENGINEERS* are widely read.

I hope you find this particular October issue up to par, both in interest and in direct value to you in your work. Once again, we have put some special emphasis on cold-weather construction operations, for more and more readers—even in the northern states—tell us that construction is going to a 12-month basis thanks to the specialized equipment and techniques developed in recent years.

Don Buttenheim

PUBLISHER

CONTRACT DOZER WORK for oil companies and mines in the Climax-Komomo area of Colorado keeps machines working and money coming in for M. L. Dubois during the winter season. Here, the International TD-18 crawler tractor is clearing a road to the Kimberley and Sellers mines on the slopes of Elk Mountain.



How to put limestone and gumbo in their place



THIS is heavy going on a new section of four-lane U. S. 80 just east of Ranger, Texas. Collins Construction Co. of Austin put in 7.8 miles here and they handled 395,000 yards of material doing it. A lot of that was rock. And a lot was limestone and gumbo.

For this sort of heavy grading, Collins called in their CAT* No. 12 Motor Grader. "Finest all-around grader I ever saw," says veteran operator V. W. Nichols.

Notice that operator Nichols sits down to handle his No. 12, even in rough stretches like this. If an operator has to stand to see his work, he tires much quicker, no matter how good he is. The operator of a No. 12 enjoys the convenience of in-cab starting, too, and power steering, and the exclusive Caterpillar accelerator-decelerator. Most of all, he enjoys the assurance he's at the controls of a tough, reliable machine that's built to do the hard work.

Backbone of the No. 12 is the strongest frame in any motor grader now on the market. Special channels make it that way. Box section circles increase its durability, as do its box-type drawbars. And the engine is of the same hardy breed—clutch, transmission, final drive are built to take heavy motor grader service.

Other features help explain the No. 12's popularity with operators and owners, too. Fast, accurate mechanical controls. Anti-creep brakes. Blade maneuverability that lets you swing from ditch cut to bank cut in less than a minute without adjusting links. Your Caterpillar Dealer will give you full details—and a demonstration, any time. He's ready with expert service, also—and parts you can trust.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

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**WANTED—
THE HARD WORK**

Diesel Engines • Tractors • Motor Graders • Earthmoving Equipment

For more facts, use Request Card at page 18 and circle No. 425



Analyzing his Michigan Tractor Dozer, Sanders Construction Corporation president says "it will pull as much as a 14 ton crawler, yet is much faster between jobs, much cheaper to maintain."

Here the 165 hp rubber-tire rig

STARTS, SKIDS 60,000 lb LOAD

Under contract for the \$20,000,000 Cousin's Island steam electric generating station at Yarmouth, Maine, Sanders Construction Corporation, Portland, went to work facing a typical Maine winter. Despite cold weather and heavy snow, they completed the job on schedule—and at a nice profit. Prominent in their successful operation was a single piece of extremely versatile equipment—a Michigan Model 180 Tractor Dozer.

Tows 55 tons up snow-slick grade

This rubber-tire unit did a wide variety of pulling, pushing, and lifting jobs. It once hauled a 43 ton set tank on a 12 ton trailer *upgrade* . . . and did the job with several inches of snow on the ground—and more falling. It regularly skidded 10 to 30 tons of sled-loaded structural steel (illustrated).

Footing on this assignment was often abrasive gravel or sand . . . much of the way uphill . . . but at no time did the four-wheel-drive Michigan have trouble starting or skidding the big loads. It also skidded sleds of 12 inch cast iron pipe . . . pulled machinery . . . graded and, with its low-pressure tires, compacted the area for landscaping.

Will do almost any job

"On the basis of performance, we feel there's hardly anything a Michigan Tractor Dozer won't do," says Mr. Sanders. "Of course, there are a few soil conditions in which it—and any other machines on rubber—just won't work. But anywhere rubber *will* work—and that's most of the time—we'll take the Michigan over ANY crawler-dozers in its size class (14 tons)! It does most jobs a lot faster. It moves around faster (up to 27 mph). Its maintenance costs

are lower. Operators like its power shift and power steer. And we like its price . . . *about \$6,500 less than other big rubber-tire dozers.*"

We of Clark Equipment Company think *you* will like its price—and performance—too. Ask your local Michigan Distributor for full details—or write us for specs and case history proof.

Michigan is a registered trade-mark of

CLARK EQUIPMENT COMPANY
Construction Machinery Division

2407 Pipestone Road,
Benton Harbor 46, Michigan

In Canada: Canadian Clark, Ltd.,
St. Thomas, Ontario

CLARK®
EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 427



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